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CACTUS AND SUCCULENT JOURNAL

VOL. XXXIII SEPTEMBER-OCTOBER, 1961 NO. 5

Fig. 81. *Echeveria ciliata.* Center of the rosette of the type plant, at San Diego, 27 June 1959. × 4.1.

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PRESIDENT'S MESSAGE

The last issue of the Cactus Journal contained no report from the President because the Journal was printed a month ahead of time so the Editor might take a little time off from his duties. I don't know anyone more deserving of a vacation so guess we will have to forgive him this time.

May, June and July were very active months for the Cactus and Succulent Society of America, Inc., with a garden tour to the Huntington Gardens on May 21st and a very good turnout by the local members. Then on Sunday, June 11th, about three hundred members and friends of the Society went to the famous "Lotusland", Madam Ganna Walska's beautiful estate in Montecito, California. It was a wonderful day, and everyone had a fine time, especially our hostess who I believe enjoyed every minute of it. The Society owes a debt of gratitude to Madam Ganna Walska for the many times she has entertained us.

July was the busiest time for the Society with a wonderful convention in Mexico, July 12th to 18th. The members who attended this one will be talking about it for many years to come, while those who missed it will never realize what they missed. Approximately one hundred members attended this first convention outside of the United States and set up a couple of records for other conventions to try and equal. First: the hotel stated we were one of the nicest group they had ever had there for a convention. Second: there was only five members down with any form of sickness during the six days of the convention and touring agencies tell us this is a real record as the average is about seventeen per day. Maybe the convention committee's stressing the careful use of water and food while in Mexico did some good after all.

I want to take this opportunity to thank the many members who helped to make this such a wonderful convention. Pat and Slim Moorten, Hazel and Harry Johnson for their preparatory work and of course again to Pat Moorten who acted as our convention chairman until her illness forced her to withdraw; Dr. George Lindsay for his fine preliminary work; Ed Gay, transportation chairman, and of course to my good right and left arms, Nick and Orva Bokarica—Nick was in charge of lodgings while Orva was the registrar and the busiest person at the convention.

Members of the Sociedad Mexicana De Cactologia, A. C. who were of great assistance during the convention were: Dr. Helia Bravo, President of the Mexican Society who went with us on the tours acting as guide and teacher, also giving us the first program of the convention. Sr. Manuel T. Castella, official representative of the Mexican Society and our convention chairman who gave freely of his time and money to insure the success of the convention; Sr. Dudley Gold for his preparatory work on the convention and his assistance during it; Sr. Hernando Sanchez Mejorada gave a fine program the first day and acted as a guide on the tours; Dr. Jorge Meyran, Prof. Eizi Matuda, Senora Gold, Senorita Gabriela Costella and many others, were of great assistance also. In fact, every person attending the convention was most cooperative and was willing to do anything called upon. All in all, this was one of the greatest conventions ever held by this society.

By the time you read this in the Journal, the Annual meeting of the Cactus and Succulent Society of America, Inc., will have come and gone. We are going to the famous Tegelberg Gardens in Lucerne Valley where we will enjoy picnic lunches, lots of plants and a talk on the convention. Sunday, September 17th should see a large gathering of Society members at this fine cactus garden. The nominating committee will report on the forthcoming candidates at this meeting with possible further nominations from the floor. The next edition of the Journal will contain details of the Annual meeting.

EDWARD S. TAYLOR, *President*

BINDING JOURNALS

Since so few sent in their Journals for binding last year, we are holding them and will allow members to send their volumes for binding in December. All Journals that were sent in for binding last year have been carefully saved for next binding date.

ECHEVERIA CILIATA
A new species from Oaxaca, Mexico, and the CILIATAE, a new series

REID MORAN

In November 1957 I visited México with Charles Mieg and George Lindsay; and on the southern part of our trip, through Puebla, Oaxaca, and Morelos, we were fortunate also to have the company of Hernando Sánchez Mejorada, Secretary of the Mexican Cactus Society. Although the trip was primarily in search of cacti, we also found many interesting Crassulaceae, including several little-known and previously unknown plants. The most striking of these, found on cliffs near Tamazulapan, Oaxaca, was an echeveria with small dense rosettes of ciliate leaves (fig. 81 on cover). The smooth leaves with fringed margins immediately distinguished this plant from other wild echeverias, vaguely calling to mind such more distant cousins as the houseleeks. This neat and handsome plant is likely to become a favorite with collectors.

Revisiting the locality in November 1959, Myron Kimnach and I found a larger colony of the echeveria. Most plants were like those found in 1957, with leaf hairs mainly confined to the margins and keel. A few plants, however, had scattered hairs on the upper and lower surfaces of the leaves (fig. 82), and in one plant (fig. 83) the leaves were rather uniformly though somewhat sparsely hairy in the distal half, much as in *Echeveria setosa* (fig. 84).

With the flowering of both the 1957 and 1959 collections in 1960 and again in 1961, this plant may now be described. Also, a plant of the type collection flowered in June 1961 in the garden of Dr. Jorge Meyrán in Mexico City; and Dr. Meyrán has kindly sent me a detailed description and a sketch.

Echeveria ciliata species nova

Rosula solitaria, subsessilis, densa, 5-12 cm diametro, ex 30-80 foliis constans, foliis viridibus, obovato-cuneatis, mucronatis, 1-2-plo longioribus quam latis, 2½-5 cm longis, 1½-3½ cm latis, marginibus pilis 1-3 mm longis ciliatis, paginibus glabris usque infrequentiore hirsutis; rami floriferi albo-hirsuti, 9-13 cm alti; cincinni 1-2, primo circinati, ultime adscendentes, 2-6 cm longi, 3-14 flores ferentes; pedicelli hirsuti, infimis 6-13 mm longis; sepala subaequalia, elliptica, acuta, 5-9 mm longa, 2-5 mm lata; corolla ovoidea, 10-16 mm longa, 6½-10 mm diametro, infra coccinea, supra intusque flava, extus hirsuta, segmentis apiculatis, 3-6 mm latis, 1-3 mm connatis; filamenta 6-7 mm longa; antherae oblongae, 2-3 mm longae; squamae albae, 1.5-3.0 mm latae; gynoecium 5-8 mm altum, 4-6 mm diametro, stylis viridibus; foliculi patentes, marginibus 1-2 mm connatis. Species *E. setosae* valde affinis at foliis paucioribus latioribusque paginibus saepius glabris sparseve hirsutis sat differt.

Plant partly glabrous and partly hirsute, the trichomes spreading and nearly straight, simple, tapering, mostly 1-3 mm long and 0.05-0.1 mm thick at the base, colorless but giving a whitish or silvery appearance, 4-8 celled, the lower cells ca. 1-3 times longer than thick, the upper longer and

Fig. 82. *Echeveria ciliata.* Moderately hairy plant of topotype *(Moran & Kimnach 7733)*, with few hairs on upper leaf surfaces, many on lower, at San Diego, 17 June 1961. × 3.7.

Fig. 83. *Echeveria ciliata.* Hairiest rosette of those found in November 1959 *(Moran & Kimnach 7733)*, 19 November 1959. × ca. 1.2.

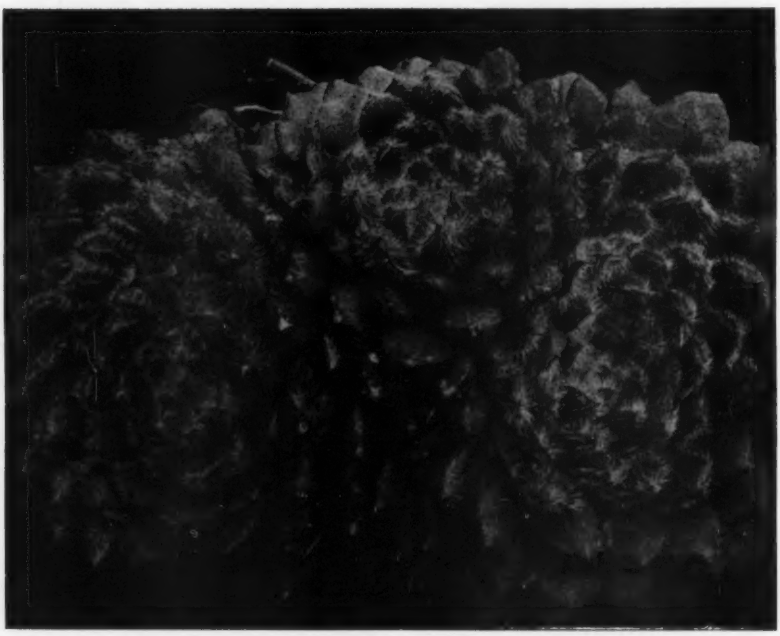


Fig. 84. *Echeveria setosa.* Freshly collected topotype *(Moran & Kimnach 7721)*, 19 November 1959. × ca. 0.75.

Fig. 85. Rosette leaves of *Echeveria ciliata* (left) and *E. setosa;* mature leaves from five freshly collected flowering-size plants of each species, selected to show the variation, 19 November 1959. × 0.75 (millimeter scale at top).

narrower, the terminal one ca. 10-15 times longer than thick. Caudex short, rarely 7 cm long, 1-2 cm thick, hirsute in narrow lines between the leaf bases, mostly unbranched but sometimes emitting horizontal branches below the rosette; these at first ca. 3 cm long and 4 mm thick, hirsute, with scattered leaves below and a terminal rosette. Rosettes dense, hemispheric or cup-shaped, 5-12 cm wide, of 30-80 leaves, rosettes of a given diameter generally having fewer leaves as the leaves are wider. Rosette leaves rather deep green (ca. 21 H 8)[1], often narrowly red-margined, drying leathery, obovate-cuneate, widest in the upper third or fourth with the lower margins straight to strongly incurved, acuminate in youth, soon obtuse and mucronate, in the downcurved older leaves appearing subtruncate because of the deflexion of the mucro, obtusely keeled dorsally especially toward the apex, flattish to broadly channeled ventrally, 1-2 times as long as wide, 2½-5 cm long, 1½-3½ cm wide, 5-9 mm thick, ciliate on the keel near the apex and on the margins nearly to the base with trichomes 1-3 mm long mainly in one line, the surfaces glabrous or with a few scattered hairs, or less commonly the dorsal surface or both surfaces sparsely hirsute in the distal half, the mucro ca. 2-3 mm long, commonly somewhat deflexed, the base 5-8 mm wide, ½-1 mm high, the margins acute basally, obtuse apically, the basal portion with several small veins paralleling the strong midvein and converging abruptly within 1 mm of the base to form the single departing strand. Floral stems (in San Diego) first appearing in February and flowering in April to July, 6-13 cm tall (to the inflorescence), 3-6 mm thick at the base, pale green becoming reddish, drying purplish red, densely whitish hirsute, with 7-21 leaves rather evenly distributed below the inflorescence, the lowest among the rosette leaves. Stem leaves ascending, elliptic, acute to subacuminate, spurred, ciliate on the margins and keel or sometimes (when the rosette leaves are hirsute) hirsute except ventrally at the base, turgid, rounded dorsally or somewhat keeled toward the apex, convex ventrally in both end and side view, the margins obtuse to subacute, the spur whitish, 1-2 mm long, irregularly 1-3 lobed; middle leaves usually largest, 8-25 mm long, 4-11 mm wide, 2-7 mm thick. Inflorescence commonly of one cincinnus but sometimes of two; cincinni 3-14-flowered, circinate in bud, straightening as the flowers open, finally 2-6 cm long, the flowers opening at intervals of 2-6 days, rising during anthesis from slightly below to well above the horizontal. Bracts similar to the upper stem leaves but smaller and decreasing upward, laterally inferior and alternately on opposite sides of the cincinnal axis, one per flower, beside or proximal to the pedicel. Pedicels hirsute, the lower 6-13 mm long, 1½-2 mm thick at the base, slightly thicker above, the upper shorter and the uppermost often about half as long, the bracteole near the base, small, triangular, or those of the upper

[1]Color with reference to Maerz & Paul 1950.

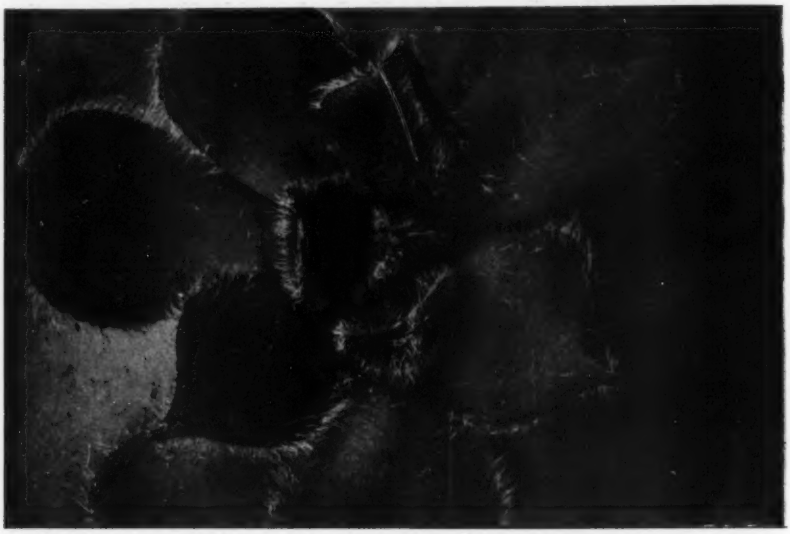


Fig. 86. *Echeveria ciliata*. Rosette of plant shown in fig. 83, with fewer leaf hairs, at San Diego, 17 June 1961. × 2.4.

pedicels obsolete. Calyx disk 4-6 mm wide, the lobes spreading at the base almost at right angles to the floral axis, somewhat upcurved so that the tips are 3-6 mm from the corolla, unequal or mostly nearly equal in length in each flower but varying more conspicuously in width, elliptic to broadly lanceolate or narrowly ovate, acute, 5-9 mm long, 2-5 mm wide, 1½-3 mm thick, sparsely hirsute dorsally, glabrous ventrally except sometimes at the apex, convex dorsally and slightly so ventrally, the margins subacute. Corolla in bud subglobular to ovoid, apiculate, not covered by the ascending sepals, at first green, coloring when ca. 6-9 mm long. Corolla at anthesis pentalateral-ovoid, obtusely angled, 10-16 mm long, 6½-10 mm thick in the basal third, 2-3 mm wide at the apex, remaining open 7-15 days, scarlet (ca. 1 L 12) in the lower half to two-thirds, dandelion yellow (ca. 9 L 5) apically and within, in the last two days or so gradually becoming orange apically, then scarlet throughout, withering darker red, the segments closing after anthesis but widespreading in fruit. Petals non-convolute, connate 1-3 mm, oblong-lanceolate, broadly acute and apiculate, 3-6 mm wide, ca. 1.0-1.2 mm thick, broadly concave ventrally, with a deeper channel the length of the filament and opening into a basal nectar pit 1½-2 mm long from the base of the petal, obtusely keeled dorsally, the two flanks scarcely at all concave, glabrous ventrally and where overlapped by adjacent petals, hirsute on exposed parts except the apex and sometimes the edges, the trichomes colorless though from some viewpoints by refraction appearing colored, conic to narrowly obovoid, ca. 0.1-0.2 mm thick, those of the lower keel to 1 mm long, those toward the apex and margins gradually shorter, the apiculus subdorsal, subulate, 0.5-0.9 mm long, the basal gibbosity 1½-3 mm high perpendicular to the floral axis. Filaments yellowish white, tapering from a flattened base to a subulate tip, extending to 6-7 mm above the base of the corolla, the antesepalous 0.7-1.0 mm wide at the base, adnate 0.6-1.0 mm, the epipetalous inserted on the distal side of the nectar pit, 0.9-1.4 mm wide at the base; anthers pale yellow, oblong, apiculate, ca. 2-3 mm long and 1 mm wide, dehiscing the first day the flower is open. Hypogynous glands white or sometimes pinkish, the secretory surface ca. parallel with the floral axis, transversely elliptic, concave, 1.5-3.0 mm wide, 0.6-1.2 mm high. Gynoecium 5-8 mm high, 4-6 mm thick a third above the base, the pistils erect, appressed, connate ca. 1 mm at the center and adjacent ones connate an additional 1-2 mm by their lips, dorsally rounded except at the base, where flattened or somewhat concave, at first yellowish white with green tips, becoming greenish but darker above, the ovaries 2½-5 mm high, 2-2¾ mm wide, 2-3 mm thick, the styles slender, 2½-4 mm long, green from the first, the stigmas secreting by about the fourth day; ovules 250-650 on a broad placenta 2-3 mm long. Follicles reddish brown (ca. 7 J 11) becoming darker with age, widespreading, the ventral surface above the basal union ascending at ca. 30° or less, flat, the ovary obovately gaping for ca. 4 mm and the style split ventrally for ca.

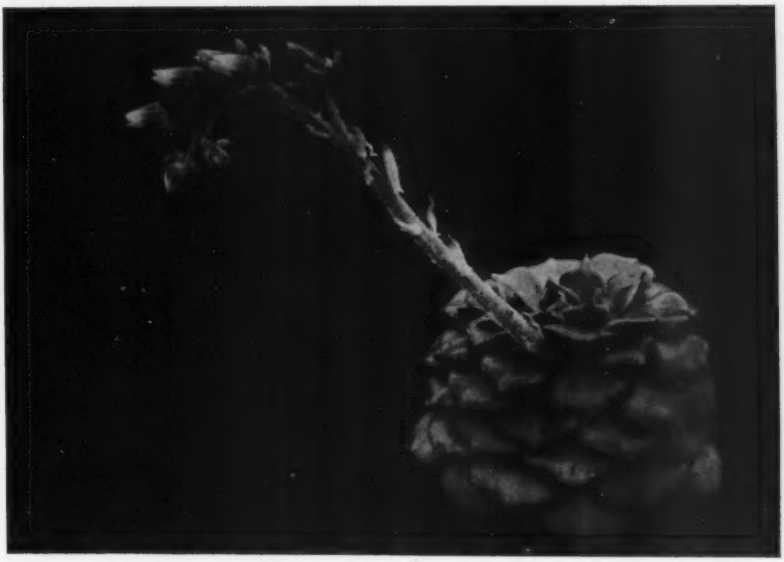


Fig. 87. *Echeveria ciliata.* Type plant, flowering at San Diego, 30 May 1960. × 0.6.

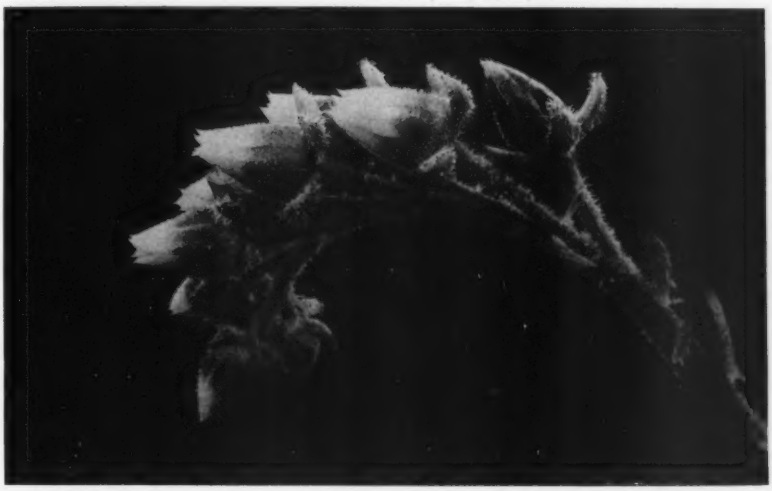


Fig. 88. *Echeveria ciliata.* Inflorescence of type plant, at San Diego, 30 May 1960. × 1.3.

1 mm, adjacent follicles connected for 1-2 mm from their point of divergence by a flat web of their united winglike margins, each of which is ca. 1 mm wide at the widest point. Seeds (apparently subnormal) yellowish brown, obovoid, ca. 0.5 × 0.2 mm. Chromosomes: n=25.

TYPE: East-facing cliff at about 2100 meters elevation, Cañada Vetutla, Oaxaca, México (near 17°42′N, 97°38′W), 19 November 1957, *Moran 6395;* flowering in San Diego 2 June 1960; SD 51097. The locality is about 100 meters above the México-Oaxaca highway at kilometer 375 and thus about 13½ kilometers northwesterly of Tamazulapan, Oaxaca. Figs. 81, 87, 88.

DISTRIBUTION: Known only from the type locality. A second collection is from north- and east-facing cliffs, 18 November 1959, *Moran &*

Kimnach 7733 (figs. 82, 83, 86, 89, 90, 91). Living plants of this collection were sent to the Instituto Nacional de Investigaciones Forestales, in México; to the Sociedad Mexicana de Cactologia, A. C.; and to the International Succulent Institute, which will distribute plants when enough are propagated.

One plant bore only abnormal flowers, already open when the corollas were only 2 mm long, with the stamens abortive. The corollas became 5 to 8 mm long and other parts in proportion. These flowers are disregarded in the description of the species.

The hairy form (fig. 83) is so different in appearance from the typical form (fig. 81) that, were their common point of origin unknown, someone might well name it as a distinct variety or perhaps even as a species. Clearly, however, it is not a variety in the sense of a geographic race. Evidently, it is only a minor variant—an extreme in a spectrum of variation with regard to a single character— arising now and again from more nearly average parents. As a matter of fact, even one and the same plant may vary somewhat from one time to another in degree of hairiness: plants in cultivation have produced leaves with more or fewer hairs than were on the leaves present when the plants were collected. For example, compare figs. 83 and 86, showing the same plant as first collected and later in cultivation.

In its typical form, *Echeveria ciliata* is immediately distinguished from all other known wild members of the genus by its glabrous leaves with permanently ciliate margins. In most other species, the leaves are quite glabrous and the margins smooth; and in those with pubescent leaves, the trichomes are evenly distributed over both surfaces, at least in the distal half of the leaf. Smooth leaves with marginal hairs are reported only in *E. fimbriata* Thompson: the leaf margin was originally described as thin, hyaline, and finely fimbriated; but according to Walther (1935: 151) it is hairy when young, later becoming smooth. That is a very different plant from *E. ciliata*—a larger plant with a glabrous compound inflorescence—and belongs to the series *Gibbiflorae* (Baker) Berger. In a few other species, the leaf margins may be papillose-denticulate or hyaline and somewhat fimbriate; but these again are very different plants, with glabrous equilateral inflorescences, and thus also belong to different series.

The distribution of trichomes in *E. ciliata* is more or less paralleled in hybrids between *E. setosa* Rose & Purpus and certain glabrous plants. It may be noted that the leaves of *E. setosa* not only are hirsute over both surfaces in the distal half to two-thirds but also are ciliate nearly to the base as in *E. ciliata*. Walther (1959b) mentioned that in some such hybrids the trichomes often are confined to the edges and keels of leaves, bracts, and sepals. In *E. setosa* × *E. sprucei*, a hybrid originated by Victor Reiter, Jr., the margins and keel in the distal third of the leaf bear slender trichomes about 0.3 to 0.6 mm long, and sometimes a few more are scattered on the dorsal surface near the apex. But in this hybrid the parallel with *E. ciliata* is closer than in some of the others, for the inflorescence is more generally pubescent, even if not so much so as in *E. ciliata*.

Clearly, *Echeveria ciliata* is most closely related to *E. setosa* Rose & Purpus (figs. 84, 92). Both have dense subsessile rosettes of leaves that are ciliate nearly to the base and glabrous on the surfaces near the base, the surfaces in the distal half of the leaf being glabrous to hirsute in the one and hirsute in the other. In other species with pubescent leaves, the rosettes are more lax and the leaves are pubescent to or more nearly to the base. Of the known pubescent-leaved species, moreover, only *E. setosa* and *E. ciliata* normally bear solitary or paired cincinni; and their flowers appear at the same season and differ only in minor details.

Echeveria setosa apparently is known only from the type locality, Cerro de la Yerba, just west of San Luis Atolotitlan (= San Luis Tultitlanapa), southern Puebla. This locality is about 35 miles northeasterly from Cañada Vetutla, the type locality of *E. ciliata*. The two plants grow on rather similar cliffs at about the same elevation and exposure. For comparable material of *E. setosa*, Myron Kimnach and I visited the type locality two days before we re-collected *E. ciliata*. Thus I was able to compare the sterile rosettes as they occur at the native localities and likewise the dried floral remains from the previous season. Our collection of *E. setosa* flowered with *E. ciliata* at San Diego in the spring of 1961, permitting further comparison.

The most conspicuous differences between *E. ciliata* and *E. setosa* are in the form, number, and vestiture of the rosette leaves. The leaves in the two species are of about the same length and thickness, but they are about 15 to 35 mm wide in *E. ciliata* and 8 to 18 mm wide in *E. setosa*. Thus in *E. ciliata* the leaves are obovate-cuneate and from about as long as wide to twice as long, whereas in *E. setosa* they are oblanceolate-spatulate and about three to four times as long as wide (fig. 85). Flowering-size rosettes of *E. ciliata* have about 30 to 80 leaves in wild and cultivated plants alike, whereas those of *E. setosa* have about 60 to 90 leaves in wild plants and up to 170 in cultivated. This difference between the two species appears to be an extension of a tendency among like-sized individuals of each species for leaf width to be greater when

Fig. 89. *Echeveria ciliata.* Plant shown in fig. 83, flowering at San Diego, 11 May 1960. × 0.65.

the number of leaves is smaller. Typical individuals of *E. ciliata* differ from *E. setosa* in their glabrous or essentially glabrous leaf surfaces, but a few extreme individuals (fig. 83) more nearly approach *E. setosa* in degree of hairiness.

Other differences, at least in tendency, may also be mentioned. In *E. setosa,* wild plants often form clusters of four or five rosettes; and the branching habit of this plant in cultivation is well known. In wild plants of *E. ciliata.* on the other hand, the caudex was unbranched so far as we saw except in one plant whose terminal bud obviously had been destroyed; but in cultivation, one plant has produced an offset. To judge from the few plants of each species grown at San Diego, *E. ciliata* tends to differ from *E. setosa* further in having fewer leaves on the floral stems and fewer flowers, though in each case the maximum number is about the same, and in having shorter pedicels, the lowest about 6 to 13 rather than 10 to 18 mm long. Grown under other conditions, *E. setosa* is described with pedicels as long as 3 cm. Likewise under other conditions, it is described and illustrated as having taller floral stems and more nearly erect sepals than in my plants of *E. ciliata;* but plants of *E. setosa* grown with *E. ciliata* do not differ in these respects. Floral structure in the two is essentially similar.

The degree of distinctness of *E. ciliata* from *E. setosa* remains uncertain. In the area between their type localities (and sole known stations)

Fig. 90. *Echeveria ciliata.* Inflorescence of plant shown in fig. 83, at San Diego, 23 April 1961. × 1.85.

are cliffs similar to those at the type localities and at about the same elevations. In November of 1959, Myron Kimnach and I examined several such cliffs along the road from Tehuacán to Huahuapan de León but found no plants of this relationship. It will be interesting to see what future collections turn up in this area. Another plant of this relationship is said to have been introduced by the late Dr. Meredith Morgan of Richmond; but I have been unable to obtain material of it.

Dr. Charles H. Uhl of Cornell University has made a chromosome count from a plant of the 1959 collection of *E. ciliata.* He reports a gametic chromosome number of 25, as also in *E. setosa.*

In the classification of Walther (1959a), *E. ciliata* falls in the series *Vestitae* Walther, the type species of which is *E. coccinea* (Cav.) DC. —also the type of the genus. Here Walther placed all plants pubescent in the inflorescence as well as in vegetative parts. Although this series is a convenience in identification, there is room for doubt that it is natural. It has almost the range of inflorescence of the genus as a whole: from a spike in *E. coccinea,* through a raceme and a false raceme of short cincinni, to a single cincinnus in *E. setosa* and *E. ciliata.* The rosettes range from few-leaved, lax, and long caulescent, as in *E. coccinea,* to many-leaved, dense, and subsessile, in *E. setosa* and *E. ciliata.* The leaves vary from densely pubescent all over, as in *E. coccinea,* to glabrous on some parts and sparsely pubescent on others, as in *E. setosa* and *E. ciliata.* And the trichomes vary from 2 or 3 mm long and several-celled, as in *E. coccinea, E. setosa,* and *E. ciliata,* through two- or one-celled, as in *E. carminea* Alexander, to at most 0.3 mm long and each a mere protuberance of an epidermal cell, towards the base of the leaf smaller or quite absent, as in *E. harmsii* Macbride. Thus the series *Vestitae,* as constituted by Walther, includes considerable variation, and the extremes are far apart. Beyond generic characters, some of the members have little more in common than the fact that they are pubescent; and, as noted above, the nature of the pubescence varies somewhat among the species. Except for being pubescent, *E. setosa* and *E. ciliata* appear more similar to the series *Secundae* than to *E. coccinea;* and *E. coccinea* appears more similar to the series *Nudae*[2] than to *E. setosa* and *E. ciliata.* Moreover, since a few members of the series *Nudae* are muriculo-papillose, it is but a short step from them to *E. harmsii* even in pubescence. Thus there is reason to question the naturalness of the series *Vestitae* or at least to inquire whether it cannot be divided into more practical units.

The species of the *Vestitae,* as defined by Walther, fall into at least five small groups. (1) In *E. coccinea* (Cav.) DC. and *E. pubescens* Schlecht., the caudex is elongate, tending to remain erect; the leaves are about 10 to 20, loosely rosulate, of moderate thickness, densely pubescent throughout with several-celled trichomes; the inflorescence is a many-flowered spike; the sepals are spreading; and the corolla is about 1 to 1½ cm long. Both species are reported to occur from Hidalgo to Puebla. They are very closely related and perhaps not specifically distinct. (2) In *E. harmsii* Macbride, *E. carminea* Alexander, and *E. amphoralis* Walther, the caudex is more or less elongate and tends to remain erect; the leaves are about 15 to 25, somewhat scattered, rather thin, puberulous with one- or few-celled trichomes or glabrous towards the base; the inflorescence is a raceme, often rather few flowered, the flowers with rather long pedicels; the sepals are spreading; and the corolla is about 2 to 3 cm long. *Echeveria carminea* and *E.*

Fig. 91. *Echeveria ciliata.* Flower of plant shown in fig. 83, at San Diego, 30 April 1961. × 5.0.

[2]In Walther's 1959 treatment, series 8, with *E. nuda* as type, is called "*Australes* Walther"; and series 10, with *E. bicolor* as type, is called "*Elatae* Walther". However, Walther originally typified the *Australes* with *E. bicolor.* Therefore, series 10 of the 1959 treatment must be called "*Australes*" rather than "*Elatae*"; and series 8, if it is to be separated, must be called "*Nudae* Walther" rather than "*Australes*". Possibly it should not be separated.

amphoralis occur in southern Oaxaca; *E. harmsii* is of unknown origin. (A supposed variety of *E. harmsii* occurs in southern Puebla, but the inflorescence with secund branches makes its affinity doubtful.) Presumably, *E. macrantha* Standley & Steyermark, from Guatemala, also belongs to this group. *Echeveria pringlei* (Watson) Rose, from Jalisco, described as thin-leaved and puberulent but with smaller flowers and rather short pedicels, may also belong here; but its position remains doubtful. (3) In *E. leucotricha* Purpus and *E. pulvinata* Rose, the caudex is somewhat elongate but soon decumbent and thus not tall; the leaves are about 15 to 30, loosely rosulate, rather thick, densely pubescent throughout with several-celled trichomes; the inflorescence is a spike or raceme, though a lower branch may sometimes bear two flowers; the sepals are erect; and the corolla is about 1½ to 2 cm long. *Echeveria leucotricha* is known only from the type locality near San Luis Atolotitlan, southern Puebla; *E. pulvinata* is reported from three localities in northern Oaxaca. (4) In *E. pilosa* Purpus, the caudex elongates but slowly; the leaves are about 25 to 35, rather loosely rosulate, of moderate thickness, sparsely pubescent with several-celled trichomes except for small glabrous areas near the base; the inflorescence has several branches—in depauperate specimens sometimes as few as two—each a cincinnus of 2 to 4 flowers; the sepals are spreading; and the corolla is about 1 to 1½ cm long. *Echeveria pilosa* is known only from the type locality, near San Luis Atolotitlan, southern Puebla. This plant is in some respects intermediate between the preceding and following groups (3 and 5). For this reason it is interesting to note that the form of inflorescence of *E. pilosa*, and likewise to some extent the habit, is paralleled in a hybrid (*E.* cv. 'Doris Taylor') between *E. pulvinata*, of group 3, and *E. setosa*, of group 5; and the same type of inflorescence occurs in other hybrids of which one parent bears a cincinnus and the other an equilateral raceme. And, coincidentally, *E. leucotricha*, of group 3, and *E. setosa*, of group 5, both occur in the vicinity of San Luis Atolotitlan, type locality of *E. pilosa*. However, Dr. Uhl reports that the cytology of *E. pilosa* gives no reason to suppose that it is either a diploid hybrid or an amphiploid. (5) In *E. setosa* Rose & Purpus and *E. ciliata* Moran, the caudex is short; the leaves are 30 to 170, densely rosulate, more or less pubescent with several-celled trichomes but glabrous over some areas at least near the base; the inflorescence is of one or two cincinni; the sepals are more or less spreading; and the corolla is about 1 to 1½ cm long. *Echeveria setosa* occurs in southern Puebla and *E. ciliata* in northern Oaxaca.

In several respects, *E. ciliata* and *E. setosa* are at the opposite extreme of the series *Vestitae* from *E. coccinea*, the type species; and it appears that the series would gain considerably in uniformity by their removal to a separate series. I therefore propose to establish for them the series *Ciliatae:* Data in the preceding paragraph show that other species of the *Vestitae* are at least in some respects intermediate between the extremes, raising the question of just where the sharpest and most natural boundary between the *Vestitae* and the *Ciliatae* may be drawn. *Echeveria pilosa* apparently is near the best boundary line, being in some respects intermediate between groups 3 and 5 of the preceding paragraph. If *E. pilosa* is placed in the *Ciliatae*, the rosette character of the group is weakened; but, at the same time, the series *Vestitae* becomes much more uniform at least as to inflorescence: in all remaining species the inflorescence is an equilateral spike or raceme. The placement of *E. pilosa* in the *Ciliatae* thus makes possible mutually exclusive definition of the two series on the basis of inflorescence and thus provides a satisfactory boundary.

Echeveria series **Ciliatae,** series nova

Trichomata simplices, pluricellulares. Rosulae sessiles vel subsessiles, plus minusve denses, 25-170-foliatae. Folia saltem nonnusquam basin versus glabra, marginibus ciliatis, paginibus apicem versus aut glabris

Fig. 92. *Echeveria setosa.* Inflorescence of topotype *(Moran & Kimnach 7721)*, at San Diego, 13 June 1961. × 1.5.

aut sparse pubescentibus. Inflorescentia pubescens, ex 1-8 cincinnis constans.

Trichomes simple, several-celled. Rosettes medium-sized, sessile or short-stemmed, more or less dense, of 25-170 leaves. Leaves glabrous at least in certain basal areas in close contact with other leaves, ciliate on the margins nearly to the base, glabrous to sparsely pubescent on the distal surfaces. Inflorescence pubescent, of one or two cincinni or a false raceme of about 3-8 cincinni.

TYPE SPECIES: *Echeveria ciliata* Moran.

With the removal of the *Ciliatae*, the series *Vestitae* becomes a more tractable group, which is easily separated from other series by means of pubescence and inflorescence. Nevertheless, several questions remain, awaiting closer study of some of the species. One question concerns the relationship to the *Nudae* and the best boundary between the two groups. A second question concerns the relationship to the *Ciliatae*. And a third question, which should perhaps come first, is whether the three remaining groups are indeed closely enough related to be kept together in one series. For the present, they seem best kept together.

REFERENCES CITED

Maerz, A., and M. R. Paul. 1950. A dictionary of color. Ed. 2. i-vii, 1-208, pls. 1-56. McGraw-Hill Book Co., New York.

Walther, Eric. 1935. Collecting succulents in Mexico, Part II. Cact. Succ. Jour. 6: 149-151.

——— 1959a. *Echeveria:* conspectus serierum. Leafl. West. Bot. 9: 1-4.

——— 1959b. Echeveria hybrids. Jour. Calif. Hort. Soc. 20: 60-62.

LITHOPS SLIDES

Prof. D. T. Cole has returned from South Africa with 300 slides of Lithops which he would like to show to local groups. He would be glad to meet those who are interested in his experiences in collecting plants in South Africa. His address is: Georgetown University, Washington 7, D.C.

CACTUS JOURNAL—COMPLETE SETS

We are glad to announce that we can supply unbound sets of Vols. 1 to 30 inclusive for $150.00. Some issues show slight fire damage but all copies are readable and are a priceless collection of material. These can be obtained on a $10 a month plan but it is necessary to order promptly while they are still available. The first of the year we will be able to supply odd copies at $1 *per copy* if available from the broken sets.

CACTUS SOCIETY

132 W. Union St. Pasadena, Calif.

NEW BOOK LIST

The November Journal will announce the 1961 Book List of Abbey Garden Press. It will also contain a list of the "fire-sale" items.

COLORADO CACTOPHILES

Developing Plot in Denver Botanical Gardens

Summer and Fall activity for Colorado Cactophiles will be development of a "Cactus Garden" in the newly established Denver Botanical Gardens, with which the club is affiliated.

The garden will occupy a plot of some 100 x 120 x 190 feet located toward the south-western boundary near the fence separating Botanic Gardens from Denver's famous Cheeseman Park. According to plan approved by Dr. A. C. Hildreth, Garden Director, the plot will be replete with huge segments of mountain rock and will be traversed by a naturalistic ravine banked with rock in such a way many cacti may be planted in crevices in representative manner.

Native Colorado cacti, almost exclusively, will be used, including, if possible, a large planting of Colorado mesae-verdae in soil brought from the location where these hard-to-transplant beauties are found. Plantings of all Colorado's eighteen native cacti is the goal of the Colorado organization.

During the coming months field trips for the purpose of collecting native cacti will be frequent. Many plants will be contributed by members of the club, and by others living in vicinities where native cacti are found.

Edgar P. Sherman,
Corresponding Secty.

SACRAMENTO SHOW

The Sacramento Cactus and Succulent Society came into being in March 1960. That year the Society took the Blue Ribbon at the State Fair with an outstanding showing of plants and with an overall educational theme. Five months old!

In 1961, the Society voted on and accepted the challenge of putting on their first Cactus and Succulent Show in the beautiful and spacious Garden and Arts Center. Sacramento is noted for its many flower clubs, with about every species of flower represented. The Garden and Arts Center is always bustling with one flower show or another.

First of all the committee decided to do everything from scratch, not using past shows as a criterion. For example: no collections were permitted, only individual plants. Also it was required that all plants be raised and groomed for a period of at least 90 days prior to the show, by the exhibitor.

The theme was "Nature's Jewels"—an extremely inviting and flexible thought. The committees were headed by Don Graham as General Chairman, with Don Chirstiansen in charge of flower arrangements, and a very generous group of talented members forming the entire panel of the various committees.

The two-day show was seen by 2300 persons, who admired 412 entries taking 253 ribbons and awards. That it was an outstanding success was the praise given it by the judges, who stated that they had never before judged a show so perfectly balanced and one that carried such harmony and beauty.

The stage was a showing of seven beautiful plants, both cactus and succulent, placed inside sparkling jewels perched on white fluted columns. The entrance was an array of arrangements, which clearly showed professional quality among amateur and first-time arrangers.

As a baby organization, the Sacramento Cactus and Succulent Society has truly grown up. Our Society has been invited to present an educational feature exhibit at the California State Fair of this year.

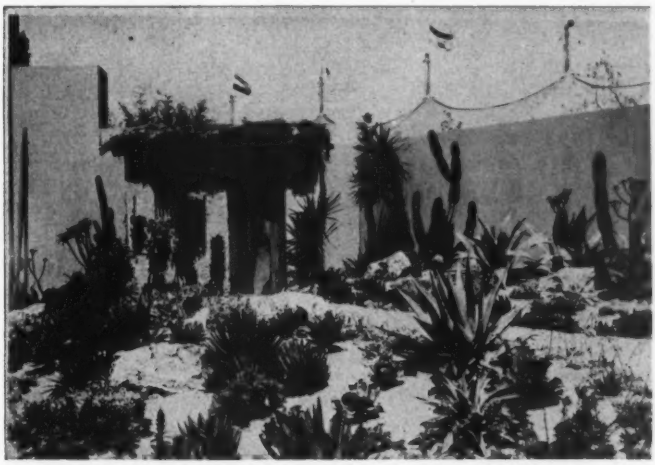


Fig. 93. Exhibit of the Cactus and Succulent Society of California.
Photo by Mrs. Charles Genasci.

CACTUS AND SUCCULENT SOCIETY OF CALIFORNIA

The 29th California Spring Garden and Home Show, which is an annual event, was held in Oakland, California on April 24th thru April 30th, 1961. This great showcase of fine plants and planting displays attracts people from all over the world. Again this year, this show won the famed Bulkley Medal which is given by the Garden Clubs of America.

Among these fine displays the Cactus and Succulent Society of California, Inc. also had a very outstanding display in a well planted outdoor garden. Only our finest cacti and succulents are chosen in great variety and all carefully labeled in large enough print to be seen at a distance. Also an indoor exhibit was on display and there again, all carefully selected and labeled. Particular attention is given to only fine grown plants, many of them very rare, and carefully taken care of by various members of our Society when not on exhibit in shows.

Because of the tremendous interest shown it is the policy of our Society to place hosts at these exhibits day and evening. We do not dress differently or wear badges; we stand quietly by and help only when the need arises.

It was my good fortune and truly wonderful experience to host on Friday, April 28th. Though a really "way down" amateur, I did my best. As the day progressed I became strongly aware of the comments made by the various people who stopped to look. Finally, thought to write down some of these sayings so I could remember to tell my family about them when I arrived home. They enjoyed hearing these comments so much, I finally broadened out to include friends and again the enjoyment of the sayings were well accepted, so thought I would pass them on to you.

Of course, the Ohs and Ahs, and "isn't it just beautiful" . . . "just great" . . . "oh how very interesting" . . . is heard again and again, but the unusual . . .

"I just love cactus and succulents, I think they are the most fascinating plants in the world, and just think, they don't care if you starve them to death either."

"Ugh!"

"I don't care for cactus, I like flowery things."

"Every time I see a cactus garden I get hot all over, I don't know why."

"I think they are interesting, but I wouldn't want one for anything."

"Anyone that thinks those things are beautiful, are dead themselves only they don't know it."

"Oh my goodness, look at this would you! Have you *ever* seen anything more beautiful?"

"Who's this Cactus & Succulent Society anyway? Ah it's some Nursery or other . . . I heard of it someplace."

"You like thaaaat?!!! I don't like desert stuff!!"

"Look at the hair on that one would you. Bet you could braid it!"

"How would you like to sit on that one?" (Heard often).

"Oh boy, look at this . . . WOW"

"Who said these things aren't beautiful . . . just look at those shadings."

Five business men stopped by and of course, did not notice me. One said "You know, those plants (cacti) just absolutely fascinate me, but I wouldn't have one of those %¢?@!! around the place! Why? I bought some of them from a nursery and did what I was told . . . the plants all died . . . too much water! Sometime after, I tried again, bought some more . . . they all died . . . not enough water . . . whoever said they were easy to grow are just a bunch of — fools . . . I know!"

In this outdoor exhibit we had a large cement donkey. One of our clever members gouged out its eyes, that is, removed the cement portion and replaced this with glass eyes which he designed from broken bottles. He also removed the bristles from a paint brush and put eyelashes in place. Much comment was heard on the donkeys wonderful soulful look, for it had such large limpid eyeballs! A young married couple came by, holding hands. Said she to him: "Oh honey, see the darling jackass. Gosh, I sure would like to have him!"
He: "How do you know he's a him?"
She: "I can tell, it's got a gleam in it's eye!"

I have been a hostess for many plant and flower exhibits, but if you haven't ever hosted a cacti and succulent exhibit, you just haven't lived!

Mrs. Adele Krueger, Secy.

MAYOR PROVES TOUGH CUSTOMER

Nogales, Ariz.—A cactus salesman got off to a bad start in Nogales. He knocked on the door. The home owner listened to his sales pitch and then asked for the salesman's license. He couldn't produce one. His customer was Mayor Abe Rochlin.

Fig. 94. Mr. Herr in his cactus garden.

GUY H. HERR—CACTUS PERSONALITY

DAVID B. GRIGSBY

If, in your travels, you should pass a well laid out cactus garden at 2033 Bonita, LaVerne, California, more than likely you will see an active sprightly gentleman tending the garden. This will be Mr. Guy H. Herr, 81 years young, who simply has too many cacti requiring attention to bother getting old. Visit with Mr. Herr a while and enjoy one of the better private gardens of cacti in the Southern California area. He welcomes cactus enthusiasts and takes great pleasure in showing off his excellent specimens to those who are truly interested. While he has other hobbies, coins and stamps, he figures that cacti grow, change and increase making them of more interest than dead materials collected only for collectings sake.

While working as a druggist in Philadelphia Mr. Herr wandered through the greenhouses in Fairmount Park one Sunday afternoon in 1912. There he saw a small display of cactus specimens, not in very good condition at that time. Then and there he made up his mind that someday he would have his own greenhouse and raise the curious spiny plants. Time passed without the greenhouse materializing and without knowledge that he would be moving to California where, in many cases, cacti can be grown in the open ground. The cactus fever grew slowly, finally bursting into flame shortly after he moved to Ontario, California late in 1917. In February of 1918 the "disease" became full blown when he acquired a small barrow load of short Trichocereus spachianus cuttings from a friend who had a hedge of it. Soon he was begging, borrowing and buying plants, cuttings and seed to satiate the desire for a cactus garden. The Herr family and plants were moved to the present LaVerne address in 1922, the final laying out of the grounds taking place in 1929.

An Opuntia maxima specimen planted in 1921 was brought along with the rest. This plant, still living and huge of trunk, forms an archway in the back of the garden. Mr. Herr, with a twinkle in his eye, will reminisce back through the years to the time when he first tried to establish this plant from a cutting. He carefully planted the cutting and watered it thoroughly and continuously until it started to rot. The rotting area was cut off and the sad routine repeated until he finally learned that many cacti, Opuntias in particular, prefer to be left alone without a lot of fussing.

The cactus garden is situated on two good sized city lots. The house is on one lot but its back yard is full of cacti in the ground plus an open sided narrow lath house and a small glass house. The other lot is all cacti plus a number of fine Agaves, a few Euphorbias and two magnificent Cycad "palms". This area is laid out with gravel walks of most peculiar design with odd curves and sharp points. If you look for the over all pattern you may recognize the design as a huge Masonic symbol formed of gravel, concrete and plants.

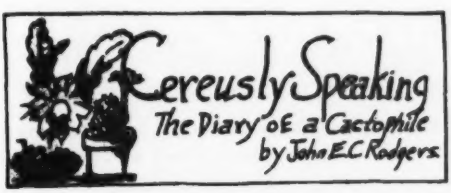
When you walk up the driveway to enter the garden your first impression will be grafts-grafts-grafts. Not just common things either. Many fine large crest of Notocactus scopa, Echinocactus grusonii and others are scattered through out the area. Besides crests there are many grafts of normal plants as Neoporteria reichii, huge Mammillaria rhodantha and parkinsonii, Lobivia famatamensis, Oreocereus celsianus and dozens more, including the strange Mammillaria bocasana inermis. The latter is similar to the normal bocasana except that it has no spines. Its fluffy wool is softer and whiter than Mammillaria plumosa. Unfortunately, bocasana inermis will not grow on its own roots but it does quickly make dense heads when grafted. The fancier of rare cacti will be amazed at the grafted specimens of the rare Denmoza erythrocephala, up to 17″ thick and 24″ high; The original plant from which the others came was planted as seed by Mr. Herr in 1931.

Mr. Herr is undoubtedly a master at the art of grafting cacti and will be delighted to help you with information about grafting. He is constantly performing experiments with various understocks in order to determine what stock is best for a given scion. His inventiveness is not confined to cacti alone however, for many ideas, from the neatness of storage in the garage to special latches for opening greenhouse doors when the hands are full, express his mental alertness. Every-

thing seems to interest this amazing cactophile. He will gladly show you his small colony of trapdoor spiders as well as a collection of Coca-Cola bottles from the time when city and state of origin was molded into the bottom. Every state in the union plus many foreign countries is represented. These bottles are set into the ground with just the bottoms showing, forming a decorative border around part of the garden. One of the special interests is *weeds* which he attacks with a fervor, using a long handled special tool he invented, meanwhile carrying on a spirited conversation about cacti. No time waster this!

Mr. Herr does not particularly like to discuss or argue about the names of plants. He loves his plants for what they are, not for their names. He has kept a record through the years of each plant he has received and assigned a number to each. The record book may or may not have the plant name but it will have when and where the plant was obtained. Plants are furnished with number stamped metal tags corresponding to the number in the record book. Mr. Herr says this saves a lot of arguing with experts about the proper classification.

Perhaps the most interesting facet of Mr. Herr's character lies in his interest in charities. When you come up his driveway you will see a sign that says "no plants for sale". However, if you show interest in obtaining a piece of one of the plants as a cutting or for grafting, he will let you have it and several more with one stipulation. You must make a donation of at least $2.00 to the March of Dimes. He has an official record book which he fills out giving you a receipt, and will show you bank deposit slips to the account of the March of Dimes. After you have agreed to this he will conduct you through the garden pointing out plants from which you may have cuttings if you want them. A $2.00 donation will give you plants worth more than your donation; a $5.00 donation and he may start digging them out of the ground! Not all plants in the garden are available for this sort of thing. For instance there are perhaps two hundred small Echinocactus grusonii in the yard but they are Mr. Herr's pets. He will only offer what he wishes to spare. Trading interests him too but it would be advisable to see what he has first for he is not interested in duplicates. One note of caution; Mrs. Herr is very ill so do not knock on the door. If Mr. Herr is home but not in the yard he will see you and come out to greet you and show you his excellent garden.



Rare minerals found in some soils, such as magnesium, manganese, sulphur, cobalt, copper, boron, etc. may be missing or in insufficient amounts to insure proper growth. Borax in my soil mixes for desert plants improves spine texture as well as spine color. Soot (flue ash, etc.) contains many rare mineral traces, even uranium (I'm told). If coal was formed when the plant world was young, then it is evident that there would be rare minerals in the organic materials that make up coal due to the fact that the plants were not compelled to live on our rain-leached soils. The oceans contain the elements concentrated by evaporation. I've mentioned before the use of ashes for chrysanthemums with spectacular results.

Other friendly assistants are some forms of bacteria which work over leafmold and release usable materials, waste products, etc. I'm working on many problems for I'm sure that even the good results I am getting can be made better. Some of my methods go counter to books and periodicals but I do get a high percentage of strong, vigorous growth, flowers, and resistance to insects and disease. Of course we all have failures but I do not attribute mine to bad luck. No plant outside of horticultural specimens ever has its own choice of a growing site, yet nature does produce some beautiful flora.

If I were to grow plants for sheer pleasure with a touch of showmanship plus a dash of braggadocis, I'd grow Rebutias for flowers, Arthrocereus mirabilis for showmanship and Rhipsalis for braggadocis. Rebutias are small, compact plants, early flowering from base in some species to top flowering for others and with colors from yellow through salmon, rose, violet, maroon to red. "What is a Lobivia" helps one to step easily into the Rebutias cousins, etc.

Arthrocereus (jointed—arthro) is a dark green, almost purple to black, single stemmed to top branching plant with blooms of ray-like petals opening at night. It sets seed readily from which a high percentage germinate and reach the adult stage. Rhipsalis have various types of stems to suit any taste. Some are pendant, some erect, and others are a combination of the two. The stems have various colors from which the white, yellow, pink, orange, etc. flowers appear—some from areoles while others break out through the skin. The fruits are colorful, from white to yellow, orange to red and purple to black. Many have a delightful fragrance in early morning, late afternoon and night. I have only a fraction of the available species. They grow best in shade and stay happily in small pots for extended periods of time. They do not have to be rank growers to flower.

If I wanted more showmanship, I would grow a variety of Orchid Cacti such as Scott Haselton lists in the Epiphyllum Handbook, pgs. 221-222. I would buy some early, some mid-season, and some late-flowering kinds in white, red, lavender, pink, orange and combinations. These take the same treatment as the geranium but the flowers vary from two to ten inches across.

If I were a fancier or collector I'd be just the way I am—jam packed to the roof with a variety of cacti and other succulents which can't be duplicated in any other plant group, just for sheer enjoyment, novelty, and beauty.

The height of the flowering season is through for me by mid-June. March, April, and mid-May are the heavy flowering months for Epiphytes, Rebutias, Lobivias, Echinocereus, Orchid Cacti, Mammillarias, Peniocereus and Cleistocactus. May to mid-June finds the end of the Mammillarias, Thelocactus, Ariocarpus, Gymnocalyciums, Parodias, Echinopsis, Selenicereus, Monvillea, etc. The hot months produce flowers on the Hylocereus, some Selenicereus, Harrisias, Eriocereus, columnar cacti, some Opuntias, some Pereskias and Pereskiopsis, etc. The cooler months bring on the repeaters and so back to Zygocactus, Christmas Cactus, Rhipsalis, Chiapasia, Disocactus, etc.

I've my plant diaries from 1934 on. The records are complete as to daily high and low temperatures, condition of sky, temperatures of my greenhouse at various times and results of plant experimentation as to growth, buds, watering, placement, etc. These notes help me to correlate results with methods used, etc. I do not claim my methods will work for everyone nor do I feel that there is any method in my madness, but I shall let you know if it doesn't work for me. I always welcome the gifts of plants, seeds, any gestures and friendships I've accrued through "succulents".

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

CHAPTER 22

AGAVES—GASTERIAS

Agave filifera growing under the bench below the Echinocerei, is reminding us not to omit it. This very large plant has grown 2½ ft. across, and its very spiny leaves remind us, painfully, of its presence as we pass the end of the bench. The rapier-like leaf, ending in a hard, sharp spine is dull blue/green with three fine white lines along its length. A light horny margin splits to adorn the edges with fine, wavy threads, giving the plant its name, filifera (bearing threads). The huge rosette shaped plant has a tightly furled conical leaf bud in the centre, and as the leaves mature they unwrap themselves from the central bud one by one, but as growth continues the tight bud always remains. Eventually, the inflorescence will rise from the centre of the cone and reach to a great height. After flowering and ripening its fruit the plant will die, but offshoots form round the base so all is not lost. Most Agaves grow too large for glasshouse culture, but nearly every collection contains one or two.

We will pass on now round the corner to the Gasterias which are sending up their long flowering stems. They thrive here under the centre bench, appreciating a little shade. Note their long branching spikes of queer pink and green flowers. They look like tiny half inflated balloons—the balloon portion of the flower being pink and the petals forming the tube either white or pink with a wide green mid rib, so wide the tube appears green. The soft colouring is exquisite, with pink blending into the green. The stem is green at the base, gradually shading to pink as it reaches the bulbous blossom. The colouring of most varieties is similar, but the leaves and the manner of growth differs. Of the numerous plants along this edge of the path few can be named with any certainty.

We are certain of G. verrucosa "covered with wart-like projections"—often called the sago plant. Actually the leaves appear to be spotted with many tiny seed pearls rather than sago. In the sun they shine with a wonderful lustre. This attractive plant has dull dark green leaves in two rows, which form a plaited pattern as they advance up the stem, one leaf folding over the next like basket work. They are not wide even at the base and taper to a fine point ending in a tiny spine.

This one with the open rosette is G. laetipunctata. It has dull green, three angled, sharply pointed leaves, thickly spotted with faintly raised white tubercles, giving a slightly roughened surface and justifying its name which means "thickly prickled". G. carinata "keeled like the keel of a ship" is similar with an open rosette with recurved three angled leaves coming to a sharp point. So thickly are the leaves peppered the spots run into each other, those along the edges forming tiny teeth. In the centre of the group is G. acinacifolia, a very large plant with dark green, smooth, shiny leaves splashed with dull whitish spots merging into each other, 4 or 5 inches wide at the base and up to 15 inches long, tapering to a fine sharp point. Although these three sided thick leaves look so strong they are quite brittle and snap easily if they grow too far over the pathway. The magnificent inflorescence rises to a height of 4 ft. or more, branching from about half way up. Even though the flowers are small and a little pale in colour they are an arresting sight because of their number and the height of the stem. It is from the leaves "shaped like a scimitar" that the plant takes its name.

Here is N. nigricans with dark green leaves coming to a sharp point like a spine. These leaves are thick smooth and shiny with many pale green spots and blotches. It is a handsome plant with its leaves in two rows instead of a cluster. G. maculata, also a lovely plant, seems to be growing on a stem with the leaves spiralling up it. And do you notice the leaves are the same width all the way up with the end rounded? It looks just like a strap. But this strap has a horny margin which forms a sharp spine at the tip. Pale greenish white spots merge to form irregular bands on the smooth, shiny green surface. The flowers differ a little from the others, being less bright and more squat, the balloon portion is very round and the tube short. Yellow stamens are well hidden. These little blossoms look like tiny water pitchers.

G. batesiana is probably the most beautiful of all Gasterias. Its dark green recurved leaves make a glorious rosette for they are wide, short and tapering and covered with raised spots in both green and white, making the surface lumpy, bumpy and ruffled. Being such a lovely green they look as though they are covered with moss with microscopic white spore-like flowers. Sunlight would spoil its beauty, its mossy appearance asks for shade. The flowers are large,

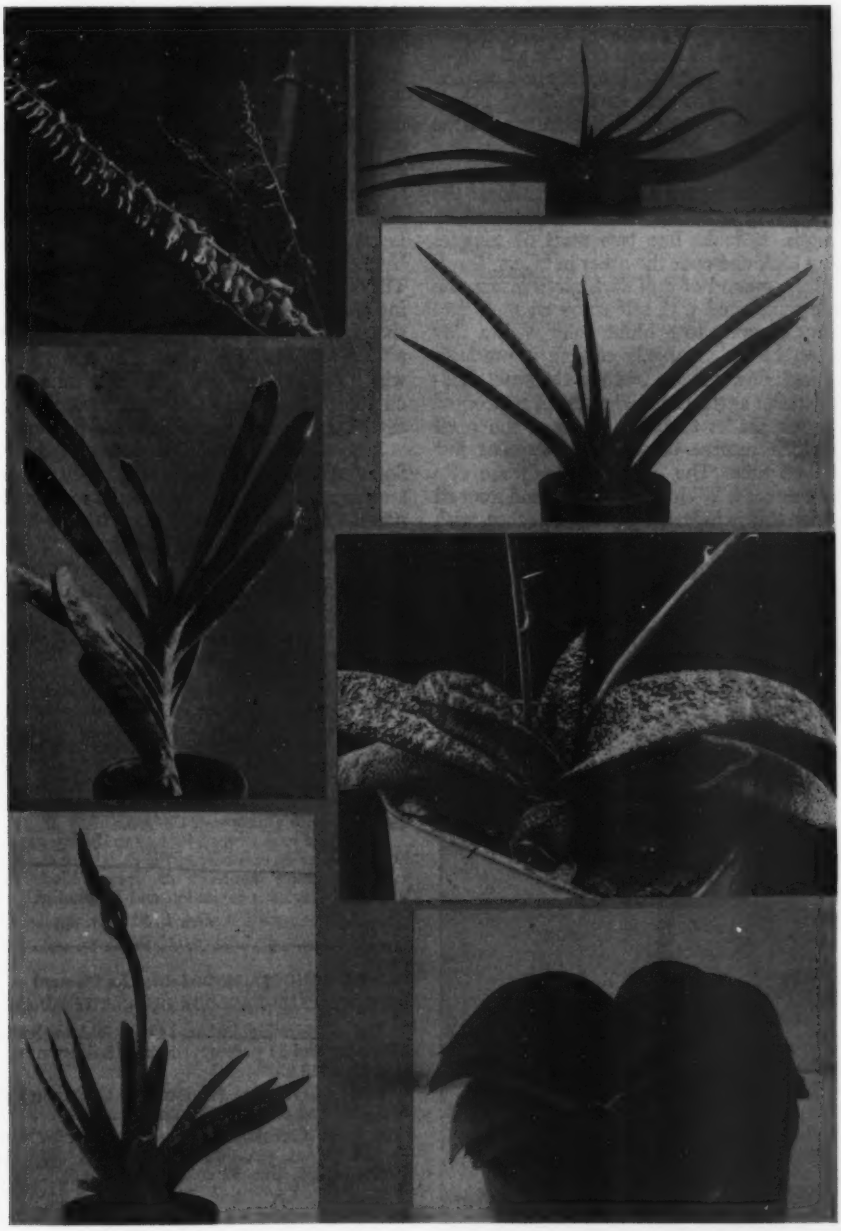


Fig. 95. Top left: Gasteria flowers. Right: Gasteria verrucosa. Middle row: G. maculata. Right G. nigricans and G. batesiana. Bottom row: Gasteria species; right G. armstrongii.

the bulbous portion elongated, with the tube almost the same width, the base a delicate shade of vieux rose which merges into the pale green of the tube, the tips of the tube are stained pink, while some of the stamens hang below, the soft colouring toning delightfully with the leaves.

Another desirable one is G. armstrongii. A queer little plant twice as wide as it is high, the 1½ inch long leaves are almost the same width as length. It looks like two rows of tongues folding back one over the other in layers, forming a little mound of dull dark green leaves, the surface roughened with self coloured spots and tapering abruptly to a blunt point with a tiny spine at the tip. Strangely enough it produces an 18 inch flower stem, green at the base, shading to scarlet at the todp. The scarlet portion of the flower shades to pale salmon at the petal tips, which recurve to show the stamens just inside the tube. The unopened buds are also highly coloured. With flowers, buds and stem all in scarlet, this is indeed a gay inflorescence, with the flower stem quite out of proportion to the size of the plant.

The rest of the Gasterias are unnamed; some have shiny leaves with flat white spots, others are dull green, with surfaces roughened by raised self coloured spots. The best of them is this pretty one with the spirally arranged rosette. The bright green, double edged leaves are covered with splodgy looking raised spots. A house wife would murmur—tapioca, but a school boy would say quite definitely—frogs eggs! For these spots look as though they were put there before the leaf was quite dry and so have flattened at the edges and look glutinous. They spread right to the edges of the leaf forming little pearly teeth. Even the flower stem is spotted. Usually the first to flower, its little pitcher-like blossoms—red shading to white with a broad green mid rib—hang on a branched stem. That little one next to it is an unnamed miniature, useful for dish gardens.

Now let us see what is on the bench above. Some of you will think these much more interesting, for here are Parodias, Espostoas, Thelocacti and a host of others dear to the heart of the cactus lover.

Fig. 96. Sedum morgianum in the garden of Madam Ganna Walska. Haselton photo.

MADAM GANNA WALSKA TRIP

By private car and bus, some 300 enthusiasts descended on the justly famous gardens of Madam Ganna Walska, Santa Barbara. Here two hours walking merely 'teased' the viewers. Carefully guided by fine assistants, six groups gasped with delight and amazement at the wide variety of cacti and other succulents and the many magnificent specimens.

Following the meeting, the charming hostess and the orderly crowd moved through the spacious ground to the tea tables set near the end of the trail, where cohostess Pearl Chase, of the Plans and Planting Committee of Santa Barbara and her helpers served cake and punch—three enormous cakes were beautifully decorated with appropriate designs.

Slowly the group found its way to the big gates, and home, chattering excitedly of the delightful experience, and expressing appreciation for Madam Ganna Walska's courteous invitation and hospitality.

Don B. Skinner, Special Events

CACTUS MONOGRAPH—Backeberg (in German)
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ABBEY GARDEN PRESS

132 W. Union Street **Pasadena, California**

QUESTIONS and ANSWERS

Conducted by HARRY JOHNSON Paramount, Calif.

Question: I have an Easter Lily Cactus (Echinopsis) but am not sure if the brown spots are due to sunburn, thrip or Red Spider (have seen no insects). Can I cut off the top where green to root it?

Miss Shirley Clark
Michigan

Answer: The brown spots in most cases are due not to disease or insect damage in the ordinary sense but to cultural or climatic difficulties or deficiencies. Cacti grow under extremely varied conditions in the wilds. They are found from sea level to 15,000' or more in the Andes and from Canada to Patagonia at the southern tip of South America. They are found from the edge of the sea to the interior of our continents. They are found from the driest deserts to wet, tropical jungles, many growing in trees as epiphytes along with Orchids and Bromeliads.

It is obvious there are several cultural groups to be considered. They may be roughly grouped as shade lovers and sun lovers with of course an infinity of gradations in between. Echinopsis belongs among the sun lovers but the species are quite tolerant of moderate shade. They have vigorous root systems and like a moderately rich soil and should not be kept too dry. They like plenty of fresh air. Usually they do not have much brown spot if not kept too dry, an impoverished soil or in too close or moist an atmosphere.

The top could be cut off and rerooted but probably the best way to treat the plant would be to trim the roots and repot. It will grow a new head if not too old or tall. Probably a young offset would make a better plant.

Question: Grafts. Are they right or wrong? Today there are several good books covering the entire subject of cacti growing, quite completely. In a review of articles on grafts we find not all agree. In fact we find that some disagree in its entirety. With this in mind I submit the following which I hope someone can clear up. "Each part of the combined plant—the stock and scion —maintains its individuality". Scott Haselton in Cacti for the Amateur.

"—I know that grafted plants, in the long run, lose many of their natural characteristics, and assume some of the characters of the stock on which they are grafted and so become contaminated". E. Shurley. Cacti, page 91.

"The added impetus of the older, more vigorous root system of the understock forces the rare or weak scion to prodigious growth, permits seedlings to mature more quickly, preserves strange crests and monstrosities that are often difficult to root." Claude Chidamian. Cacti and Other Succulents.

"—for there can be no doubt that grafting changes the character of the plant, even to making it unrecognizable." Franz Buxbaum. Cactus Culture, page 85.

"Grafting is a method of propagation in which the primary purpose is—to change over the form, character, fruit bearing quality, etc. Wise. Garden Encyclopedia. Page 583.

"I want it understood here that grafting does not in any way change the nature of the plant or create new species." Dr. A. D. Houghton. The Cactus Book, pp 40-41.

Don Graham
California

Answer: These are perennial questions among beginners: whether grafting is right or wrong does it make new species. Actually to the first question the answer is that it is being discussed in the wrong field. It is not a question of ethics but of personal taste. "De gustibus non est disputandum". The purist wants plants on their own roots. Others enjoy the bizarre forms of many grafted plants. Others graft for propogative purposes. Each persons has his own reason.

To the second question as to whether the stock vegetative or genetic changes in the scion the answer is yes and no. Vegetative changes, yes, if the plant is forced into vigorous growth. However they can be grown into normal plants with proper sun and fresh air if the stock is not forced. Our European friends quoted by Mr. Graham may believe the changes are more deeply embedded but this is due to faulty observation. As Mr. Haselton and Dr. Houghton insist there are no genetic changes at all. To understand this one should know that somatic cells and sexual cells are always separated in an alternation of generations. Somatic or body cells reproduce exactly the individual except in rare mutations. The sexual cells (pollen=male, ovule =female), carry the possibility of infinite changes within the gamut of the strain or species. It is only through the pollination of the flower and the resultant seed that diversity (evolution) goes on. Mutations (changes) have been made by chemicals operating on vegetative cells on the tips of shoots. However here it is probably by the knocking out of one or more genes on a chromosone so that when it divides in new growth a controlling factor is gone and a recessive gene can operate, not by the addition of a new factor.

CULTIVATED AND NATIVE AGAVES IN THE SOUTHWESTERN UNITED STATES

AUGUST J. BREITUNG
1416 S. Glendale Ave., Glendale, California

PART 16

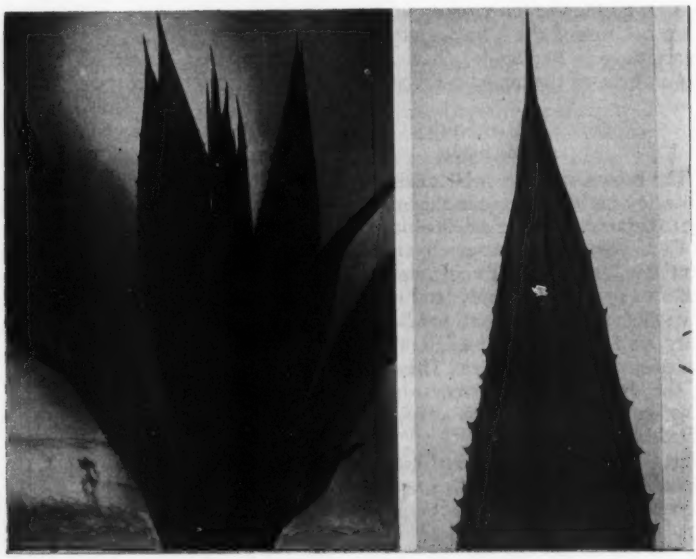

Fig. 97
Agave aboriginum. Left: grown by Dr. Howard S. Gentry, Murrieta, Calif., approx. 1/10 natural size. Right: leaf detail of same rosette showing marginal teeth and terminal spine, approx. 1/3 natural size.

Agave aboriginum Trelease, Trans. Acad. Sci. St. Louis, 18(3): 34, 1909.

Distribution: Mexico; Veracruz, type from plantations around Tuxpam.

Rosette 1.8 to 2:5 m. in diameter, stemless or nearly so, stoloniferous; leaves 5to 11 cm. wide, 7 to 15 dm. long, persistently gray, scarcely striate, rather fleshy, acuminately pointed; spine 4 mm. wide, 35 to 50 mm. long, conical, round-grooved to the middle, often decurrent on the margin for its own length; teeth similarly colored, 5 to 8 mm. long, 20 to 35 mm. apart in the middle, continuing nearly to the tip, sometimes with intercalated smaller ones, heavy, upcurved or the tip recurved, their deltoid bases 5 to 8 mm. wide and sometimes concave below, the intervening thick usually green margin nearly straight. Flowers and fruit not seen.

Agave endlichiana Trelease, Trans. Acad. St. Louis, 18(3): 34, 1909.

Distribution: Mexico; Veracruz, type from Huatusco.

Rosette 1.5 to 2 m. in diameter, stemless, stoloniferous; leaves 5 to 9 cm. wide, 0.8 to 1.5 m. long, narrowly lanceolate, light to dark green, spine 4 to 5 mm. wide, 15 to 30 mm. long, garnet-colored to chestnut, becoming grayish, smooth and glossy, somewhat flexuous, almost half-round below, obliquely round-grooved or concavely flattened, sometimes with a low median keel to beyond the middle, usually intruded ventrally and dorsally into the green tissue; teeth bright garnet or chestnut, pointed, 1 0to 20 or 30 mm. aport, about 3 mm. long, heavy, upcurved, gradually tapering, intervening margin thin, translucent, straight or low-repand; inflorescence and flowers unknown to writer, capsules abovoid, 30 mm. wide, 60 mm. long.

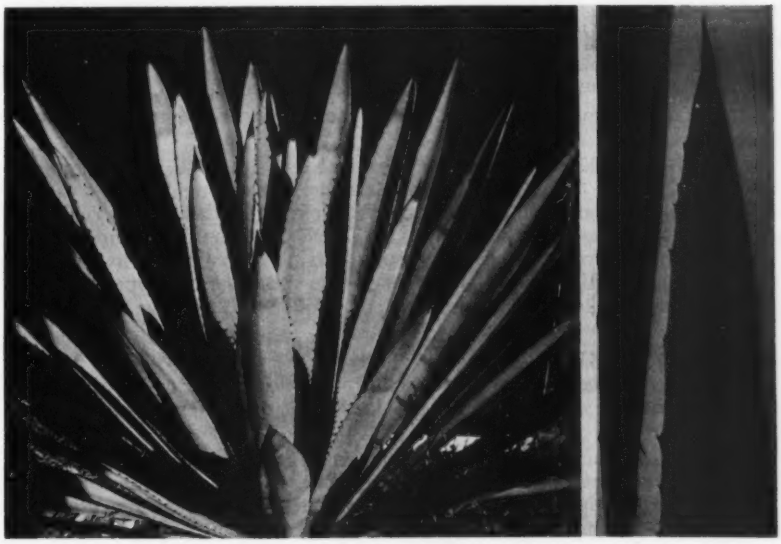

Fig. 98
Agave endlichiana. Left: grown by Dr. Howard S. Gentry, Murrieta, Calif. approx. 1/6 natural size. Right: leaf detail from same plant showing characteristic armature, approx. 1/3 natural size.

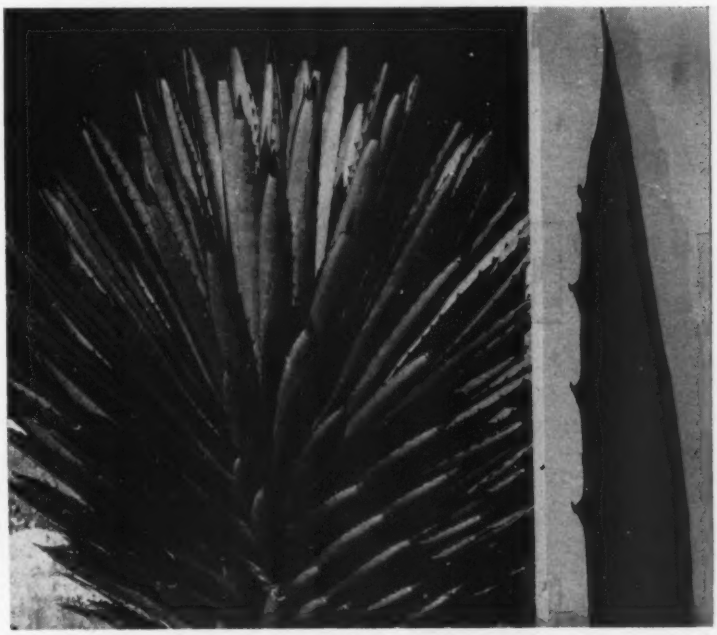

Fig. 99
Agave karwinskii. Left: grown by the University of California Botanical Garden, Los Angeles, Calif., approx. 1/12 natural size. Right: upper portion of leaf from same rosette showing heavy spine and teeth.

Agave karwinskii Zuccarini, Act. Acad. Caes. Leop. Carol. 16: 677, 1833.

A. corderoyi Baker, Gard. Chron. new series, 8: 398, 1877.
A. bakeri Ross in Boll. Soc. Sci. Nat. ed econom. Palermo, 1894.

Distribution: Mexico; Puebla and Oaxaca; type cultivated in Europe, probably from Tehuacan.

Rosette 0.8 to 1 m. diameter terminating in a trunk 2 to 3 m. high, stoloniferous; leaves 2 to 4 cm. wide, 3.5 to 7 dm. long, narrowly lanceolate, stiff and rigid, green or transiently glaucous, concave; spine 3 to 6 mm. wide, 25 to 50 mm. long, dark brown, conical or triangular, grooved above, decurrent for 5 to 7 cm.; teeth strong, upcurved, dark brown, 3 to 5 mm. long, 2.5 to 4.5 cm. apart, the intervening margin nearly straight between them; inflorescence 4 to 6 m. high, the oblong-ovoid panicle occupying the upper half; flowers greenish-brown or reddish 36 to 40 mm. long; capsules 3.5 to 5 cm. long.

Agave murpheyi Gibson, Cont. Boyce-Thompson Inst. 7(1): 83, 1935.

Distribution: Arizona, localized to central Arizona, Queen Creek, near Superior; Roosevelt Dam; Tonto Basin; Paradise Valley; type locality, near Boyce Thompson Southwestern Arboretum, Superior.

Rosette 1.3 m. in diameter, acaulescent, stoloniferous, leaves 5 to 8 cm. wide, 6 to 6.5 dm. long, narrowly lanceolate, widest above middle, flat above from base to middle becoming strongly concave near tip, smooth and pale glaucous-green on both surfaces, crossbanded; spine 4 mm. wide, 15 mm. long, glabrous, reddish-black becoming gray, grooved only near the base, shortly decurrent; teeth similarly colored, 1 to 3 mm. long, curved upward or downward, on fleshy prominences; inflorescence 3.5 m. high, panicle ovate about 8 dm. long; flowers 6 cm. long, pale greenish-yellow tinged with red, capsules 2.5 wide, 6 cm. long, flowers followed by bulbils. May-June.

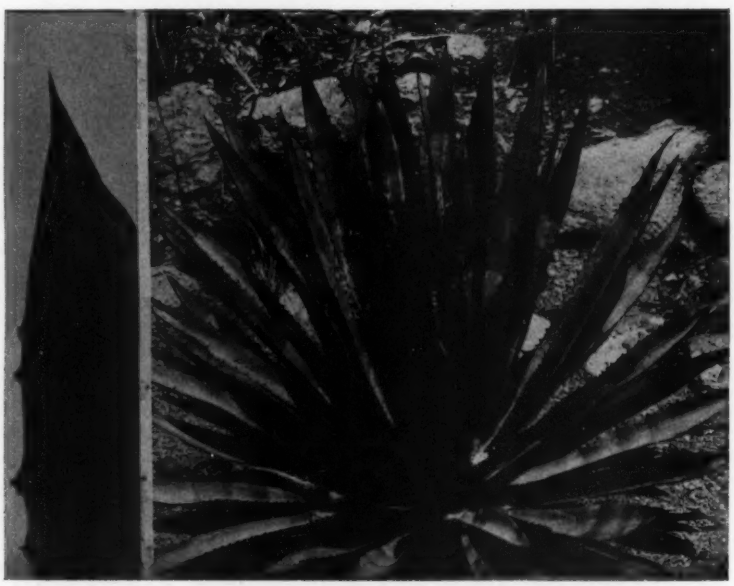

Fig. 100
Agave murpheyi. Right: rosette grown by the Boyce-Thompson Southwestern Arboretum, Superior, Arizona, approx. 1/8 natural sifie. Left: terminal portion of blade showing short-conical spine and teeth on low prominences, approx. 1/2 natural size.

CONVENTION BUS TRIP TO "THE VALLEY OF THE OLD MEN"

NICK BOKARICA

This trip was known as a visit to the "barranca de Vanados" or "Home of the Cephalocereus senilis". I don't think anyone really knows how many species and variety of cacti and succulents are in this area. On July 13th at 7:00 a.m., two 40-passenger busses, loaded with box lunches, soda pop and five gallon bottles of pure mineral water, we were ready for our trip. The arrangements had been made by our never to be forgotten convention chairman Senor Manuel T. Castella, and his two American assistants, Mr. Edward (Ted) Taylor and Mrs. Orva Bokarica.

We boarded the busses in front of the Del Prado Hotel entrance, our Convention Headquarters. Some people used private cars on the start to the Venados. We traveled northeast to the town of Pachuca, approximately 52 miles from Mexico City on highway No. 85, then leaving Pachuca, a silver mining town, the climb started up a paved highway through the town of Rio Del Monte and into the village of Valesco. Here we had one of those standard bus stops of 30 minutes at the old ancestral home of our gracious Mexican Society member, Senor Hernando Sanchez Mejarada. The elevation was 10,000 feet, located in the rain forest belt. Due to the metric system employed in Mexico, I will endeavor to convert measurements into miles, feet and inches.

It was our good fortune to be in the lead bus and have the privilege of sitting next to a most wonderful and interesting person. A truly great woman and ready and excited for a good outing among the cacti and friends. It was none other than Dr. Helia Bravo H. Even if our Spanish and her English was not easily understood between us, we really enjoyed ourselves as we traveled along. She was kind enough to name several varieties of Agaves, Mamms. and Coryphanthas before arriving at Valesco; from there Senor Mejarada was the guide in the front of the bus and described things as we rolled along. We dropped 2000 feet or more in about 10 miles. The first of the Cephalocereus began to appear, then mounds of Mammillaria geminispina and the farther into the valley the greater the stands of "Old Men", surrounded by large mounds of Mamms. 3 to 4 feet across and as high as 2 feet. Among them stood giant sized Ferocactus ingens and other forms of Ferocactus, many 4 to 5 feet high and measuring 30 inches across.

Suddenly on a gentle slope between two high hills showed up a spectacular stand of Astrophytum ornatum. Many, if they had grown straight up rather than down the slope and just the last quarter of them turned upright, would have measured 3 and 4 foot in height and about 8 to 10 inches in diameter.

Many large clusters of Dolichothele longimamma were seen under the thorned bushes, and in every direction you turned were large colonies of Coryphantha erecta. On the faces of cliffs beyond human reach were growing, in the cracks and crevices of the stone formations, many varieties of Dyckias, Hechtias, Tillandsia and the type local of Agave attenuata.

Many Bromeliads seem to attach themselves to the high growing Cereus or other trees that had pockets or deposits of dead materials or humus. As the afternoon began to throw its shadow to the east of all tall objects, it was a sign for Senor Mejorada and his two bus checkers, Mr. Taylor and Mr. Bokarica to round up the

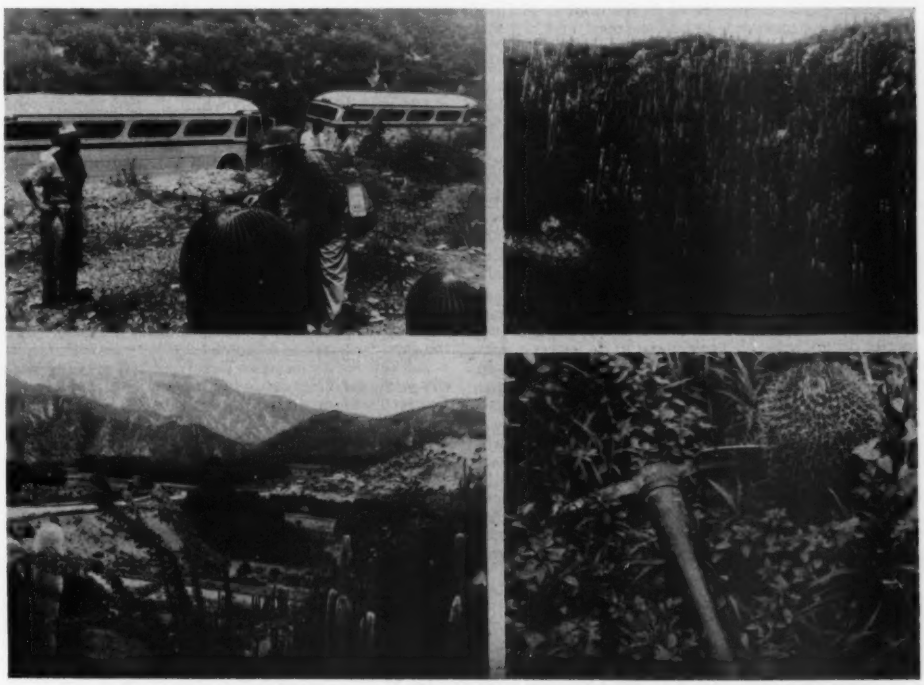

Fig. 100. Top left: Echinocactus ingens (the seed bandit is Ted Taylor). Top right: Cephalocereus senilis. Lower left: Cephalocereus senilis and Valley of Venados, Hidalgo. Bottom right: Mammillaria kewensis var. craigii. Photos by Ed and Betty Gay at Venados, Hidalgo.

American Mavericks scattered over mountain and desert and herd them back to the point of origin, Del Prado Hotel, Mexico City.

On our way back from the Valley of the Old Men we stopped again at the hacienda of our wonderful host of the day, Senor Mejorada, and were served native grown pineapple punch and native cheeses. We strolled through his gardens and ancient rooms filled with many artifacts of centuries ago. The usual 30 minute bus stop ran into an hour. Gathering our group together we proceeded to Mexico City with only enough time to rush to our rooms and quickly clean up before dinner was served at 8:30 p.m. This was the end of a grand and glorious day for practically everyone, especially this writer.

To be Continued

September-October 1961 Offering of Plants
by the International Succulent Institute, Inc.
(Please address all communications to the Secretary, J. W. Dodson, 921 Murchison Dr., Millbrae, Calif.)

CACTI

ISI 43 *Borzicactus neoroezlii* Ritter. The tree-like cactus misidentified by Backeberg as *Seticereus roezlii*, which is a synonym of *B. sepium;* it has recently been given a valid name by Ritter. See photo in Cact. Succ. Journ. Am. 32: 111, 1960. Plants grown from seed collected by F. Ritter (#301) in northern Peru. $1.25

ISI 44 *Copiapoa haseltoniana* Back. A handsome clustering cactus with globose stems covered with a grey, waxy coating. Seedlings grown from seed collected by F. Ritter (#208) in Chile, locality data not yet available. $1.50

ISI 45 *Disocactus himantocladus* (Rol.-Goss.) Kimn. An epiphytic cactus (better known as a *Pseudorhipsalis*) with strap-shaped stems and numerous inch-long orange flowers. UCBG 52.1084, collected in 1915 by C. H. Lankester at Pozo Azul de Pirris, Costa Rica, 500′ alt. $1.25

ISI 46 *Disocactus macranthus* (Alex.) Kimn. & Hutchis. X *D. nelsonii* (Britt. & Rose) Lind. A new hybrid with numerous small magenta flowers. A hybrid by Myron Kimnach in 1956 of *D. macranthus* (UCBG 51.951—the clonotype) and *D. nelsonii* (UCBG 50.-2280—pollen parent). $1.25

ISI 70 *Espostoa mirabilis* Ritter *nom. nud.* A beautiful, as yet unpublished species with long white bristles and short red spines. Seedlings grown from seed collected in northern Peru by F. Ritter (#670), locality data not yet available. $2.00

ISI 71 *Haageocereus divaricatispinus* Rauh & Back. A fine new species forming clumps of reddish or yellowish spined stems; the flowers are purplish. Seedlings received from the University of Heidelberg, Germany, grown from seed of the type collection (#K176 [1956]) collected by Werner Rauh in the Lurin Valley (south of Lima), Peru, between 800 and 1200 m. alt. $1.25

ISI 72 *Navajoa fickeisenii* Back. One of the rarest and smallest of native cacti, this recently published species differs from *N. peeblesiana* in its longer spines and yellow flowers. Collected by N. A. Paradine in northern Arizona near the Utah border, in disintegrated sandstone on gentle slopes in bunch grass and among rocks on a mountaintop. $6.00

ISI 73 *Pediocactus paradinei* B. W. Benson. A newly described small, globose cactus with hair-like central spines; see Cact. Succ. Journ. Am. 29: 136, 1957. Collected May 14, 1961 by N. A. Paradine at the type-locality, Houserock Valley, just below the Kaibab rim, Coconino Co., Arizona, in disintegrated sandstone on gentle slopes with sagebrush, cedar and grass, ca. 5000′ alt. $3.25

ISI 74 *Pediocactus sileri* (Engelm.) L. Benson. Better known as *Utahia sileri*, a small globose and much sought-after cactus. Collected May 15, 1961 by N. A. Paradine near the Arizona-Utah border, 5000′ alt., in a hilly, desert area of red sand; here there are usually only one or two rains each year and occasional light snow. $3.25

ISI 116 *Rhipsalis lumbricoides* (Lem.) Lem. The creeping or pendent stems are densely hairy, especially in the juvenile stage. This collection is perhaps closer to the questionable species *R. leucorhaphis* or *R. aculeata*. UCBG 55.292-2, collected by F. Ritter (#365), locality data not available. $1.00

ISI 117 *Sclerocactus whipplei* (Engelm. & Big.) Britt. & Rose. A small, globular species with dense, often hooked spines and purple flowers. Collected May 16, 1961 by N. A. Paradine near the Arizona-Utah border, in a hilly, desert area in red sand, ca. 5200′ alt.; rain occurs only once or twice annually. $2.50

ISI 118 *Weberbauerocereus albus* Ritter *nom. nud.* An unpublished species with columnar stems covered by white spines and with a lateral cephalium. Seedlings grown from seed collected by F. Ritter (#571), probably in Peru. $1.50

OTHER SUCCULENTS

ISI 206 *Adromischus alveolatus* Hutchis. One of the finest new species of this genus, with small, compact, football-shaped, greenish-silver leaves. See Cact. Succ. Journ. Am. 28: 184, 1956. UCBG 54.116-1, the clonotype, collected in 1952 by H. Hall 8 miles N. of Concordia on the road to Goodhouse, Namaqualand, S. Africa. $1.50

ISI 207 *Aloe albiflora* Guill. One of the finest new introductions, a dwarf *Aloe* fully grown at 6″, the leaves prettily spotted with white, the tiny flowers bell-shaped and white; a new genus, *Guillauminia*, has recently been established for it. Very highly recommended. Seedlings obtained by cross-pollinating the two clones of UCBG 53.342, received in 1953 from the Botanical Garden in Tananarive, Madagascar. $2.25

ISI 208 *Aloe saponaria* Haw. An excellent rockery plant with spotted leaves and red-yellow flowers. From seed collected by S. Kitching on the veldt near Durban, Natal, S. Africa. $1.00

ISI 209 *Aloe thraskii* Baker. A stately species with recurving, deeply channeled leaves; seldom available. From seed collected by S. Kitching on the veldt near the coast in Natal, S. Africa. $1.25

ISI 220 *Aloe vaotsanda* Decary. A tall-growing species with gracefully recurving leaves and yellow-orange flowers; seldom available. Large seedlings from the University of Heidelberg, Germany, grown from seed collected in 1959 by Werner Rauh (#M1317) at Cap Sainte-Marie, S. Madagascar. $1.25

ISI 211 *Caralluma retrospiciens* var. *tombuctuensis* (Chev.) White & Sloane. A spectacular stapeliad with 3-foot long stems and 5-inch wide terminal clusters of violet-black flowers. From seed collected in 1960 by Werner Rauh (#K535) in dry forests at Lake Baringo, Kenya, E. Africa. $1.50

ISI 212 *Ceropegia barklyi* Hook.f. A species rather similar to *C. woodii*. We offer a form which has petals thrice the normal length; a real curiosity. UCBG 52.1268, collected by E. A. Pienaar in the Transkei, Transvaal, S. Africa. $1.25

ISI 213 *Cissus juttae* Dint. & Gilg. One of the rare non-vining members of the Grape Family with a thick stem and an odd, peeling skin; seldom available. 4″ seedlings grown by M. Malherbe from seed collected

by him in Great Namaqualand, S. W. Africa. $1.75 and $2.50

ISI 214 *Dyckia frigida* Hook.f. A Brazilian member of the Pineapple Family with small rosettes of stiff, spiny-edged leaves. From seed gathered from plants in the Strybing Arboretum, Golden Gate Park, San Francisco. $1.00

ISI 215 *Echeveria gigantea* Rose & Purpus. One of the largest and most beautiful species, with crisped, reddened leaf-edges. Moran & Kimnach 7720, grown from seed collected Nov. 16, 1959 at the type locality, 7000′ alt., Cerro de la Yerba, 9 miles S.E. of Zapotitlan, near San Luis Atolotitlan (formerly San Luis Tultitlanapa), Puebla, Mexico; the plants grew on a soil-slope at the foot of a cliff on which grew *E. setosa* (this is also the type locality of this species) and *Sedum* aff. *oaxacanum*. $1.50

ISI 216 *Euphorbia grandidens* Haw. A good pot-plant with 3- to 4-angled stems less than an inch thick; eventually it becomes tree-sized. From seed collected by S. Kitching in coastal areas near East London, S. Africa. $1.25

ISI 217 *Hechtia* species. A curious terrestrial bromeliad with scurfy leaves. UCBG 58.1068, plants grown from seed sent by Marnier-Lapostolle of France; the original plant was sent to him by Fritz Schwarz of San Luis Potosí, Mexico. $1.25

ISI 218 *Huernia quinta* (Phillips) White & Sloane. A dwarfed stapeliad with pinkish white flowers decorated with circles of red; highly recommended. UCBG 51.1174, collected in 1945 on road from Naboomspruit to Nylstroom, W. Transvaal, S. Africa, by pupils of the Naboomspruit Public School, growing under shrub with *Caralluma melanantha* in poor laterite soil; received from J. G. Louw of Beaufort West, S. Africa. $1.25

ISI 219 *Pilea serpyllacea* (H.B. & K.) Wedd. An oddity of the Nettle Family with small succulent leaves windowed on the under surface and flowers which suddenly shoot forth pollen if touched just before they open. UCBG 59.033, collected on Nov. 9, 1957 by P. C. Hutchison (#1801) on the ruins of Ollantaitambo, 3000 m. alt., Prov. Urubamba, Dept. Cuzco, Peru. $1.00

ISI 210 *Pleiospilos simulans* (Marl.) N. E. Brown. A classic example of mimicry in plants, for the leaves closely resemble greenish red granite. From seed gathered by M. Malherbe from his cultivated plants originally collected in the Graaf Reinet area, S. Africa; the seed was not hybridized, as none of the other species were in bloom. $ .75

ISI 221 *Sedum moranii* Clausen. A little-known species deserving of wider cultivation, allied to *S. obtusatum* or *S. laxum*, with a hirsute inflorescence and bright yellow flowers. UCBG 61.896, collected at the type locality in May 1961 by P. C. Hutchison (#2068) and C. H. Uhl 3 miles downstream from Almeda Mine and 1 mile N. of Grove Creek Bridge (below Galice), Oregon. $ .75

ISI 222 *Senecio citriformis* Rowl. Allied to *S. (Kleinia) radicans*, but the stems do not root along the under-surface; a choice, recently described species. Rooted cuts of the clonotype, collected by H. Hall (Nat. Bot. Gdns. 197/54) at Donker Kloof, Montagu, S. Africa. $1.50

ISI 223 *Thompsonella minutiflora* (Rose) Britt. & Rose. A rare member of the *Crassulaceae* with rosettes of undulate leaves and compact spikes of *Graptopetalum*-like flowers; never before available to collectors. Moran & Kimnach 7706, grown from seed collected Nov. 15, 1959, 5500′ alt., at San Antonio Texcala, 7 miles N.E. of Zapotitlan, Puebla, Mexico; the plants grew in the rubble of a path and nearby grew *Sedum allantoides* (probably introduced), *S. hemsleyanum*, *Villadia ramosissima*, 3 spp. of *Ferocactus*, 5 spp. of *Mammillaria*, and *Neobuxbaumia tetetzo*. $1.50

CORRECTIONS

It was inevitable that some misprints would creep into our lists and some of the data be found incorrect. Occasionally we will list corrections, as well as the identification of unnamed species.

List #1, Sept.-Oct. 1958

ISI-103 for *"Haworthia anugstifolia"* read *"Haworthia angustifolia"*

ISI-104 *Haworthia paradoxa:* for "Farm Vermaalykheit" read "Farm Vermaaklikheid" (a Boer word meaning "recreation")

ISI-170 for *"Puya caerulae"* read *"Puya caerulea"*

ISI-181 for *"Crassula colae* Bally" read *"Crassula colae* Baker"

List #3, May-June 1959

ISI-295 *Sedum moranense:* plants distributed under this name have been determined by both Reid Moran and P. C. Hutchison as *S. nanifolium* Fröd, a little-known species with yellow flowers.

List #4, March-April 1960

ISI-127 *Sempervivum tectorum* var. *atlanticum:* for "Grand Lutas" read "Grand Atlas"

ISI-341 *Disocactus quezaltecus:* for "Standl. & Meyerm." read "Standl. & Steyerm."

List #5, Sept.-Oct. 1960

ISI-381 *Aloe jacksonii:* for "collected by G. W. Reynolds" read "collected by T. H. E. Jackson"

ISI-386 *Kalanchoe* species: according to P. R. O. Bally this has been determined at Kew as a form of *K. lugardii* Bull.

ISI-365 *Monadenium guentheri* var. *mammillare:* for "collected by P. R. O. Bally" read "collected by P. J. Greenway"

ISI-379 for *"Sarcostemma articulata"* read *"Sarcostemma* species". *"S. articulata"* is an unpublished name which should be removed from labels until it or a substitute is validly published.

TEXAS CACTI

Cacti found in the El Paso area, within approximately 75 miles radius of city. With the help of the El Paso Cactus and Rock Club members, the following list was compiled of cacti found in the El Paso area:

Echinocereus: rosei, lloydii, dasyacanthus, chloranthus, fendleri, stramineus, dubius, Conoideus coccineus, triglochidiatus.

Echinocactus horizonthalonius, Echinomastus intertextus, Epipthelantha micromeris, Ferocactus wislizeni, F. uncinatus.

Coryphantha macromeris, C. muehlenpfordtii, Escobaria tuberculosa, E. sneedii, E. dasycantha, Mammillaria: meiacantha, microcarpa, heyderi, hemisphaerica, denudata, wrightii. Coryphantha neo-mexicana.

For those who care to roam farther afield, the following may be found: Homalocephala texensis, Lophophora williamsii, Hamatocactus setispinus, Opuntia linguiformis, Thelocactus bicolor, Ariocarpus fissuratus.

Cacti found in the El Paso area within approximately 75 miles radius of city. Ferocactus visnaga, Echinocereus viridiflorus, Echinocereus reichenbachii.

FROM DUBLIN

Member Jomes J. O'Connor says, "With reference to article on pages 71 and 72 of the May-June Journal, I enclose a photograph from the 'Irish Times' of an interesting display of succulent plants here in the center of this city. Thirty thousand succulents were used to make a bed to commemorate the Patrician Year. The circular bed must have been at least 80 feet in diameter."

SUSTAINING MEMBERS

Shirley Start, Calgary, Canada.

A Cactophile's Tour of Mexico

By ED AND BETTY GAY

The Society's Mexico City convention gave these two cactus lovers an ideal opportunity to see more of Mexico. We were lucky enough to have over a month for the trip, but several months wouldn't have begun to give us time enough for all the exploring we were eager to do.

All winter and spring we had been studying everything we could get our hands on regarding the cacti of Mexico. We had planned and re-planned our trip a dozen times, trying to set the best route for photographing and collecting as many different species as possible. Our final decision was to cross the Rio Grande at Eagle Pass, Texas, entering Mexico at Piedras Negras, Coahuila. We would then head south toward Mexico City, skirting the Sierra Madre Oriental range, with side trips east to Monterrey and to Ciudad Victoria. After the convention we would return to Los Angeles along the west coast of Mexico, re-entering the United States at Tijuana. Our vehicle was a new pickup fitted with a "camper" body, which would give us a place to sleep and facilities for preparing meals if we did not find accommodations along the way. Betty's mother, Mrs. Anna Huff of Tucson, was our travelling companion on the way to the convention.

Midday on June 22nd found us travelling south out of Piedras Negras on Highway 57 through the farmlands of the Rio Bravo (Rio Grande) valley. From this point on, we'll quote a bit of what the tourist guide books have to say about the towns and cities en route, where normal tourists would spend their time. Then we'll tell you what we found in the countryside around them, where we spent *ours*.

MONCLOVA, "an industrial city, is easily distinguished from afar by her great smokestacks. There are many smelting plants here." Many other plants, too, of the cactus family, mainly species common north of the border in Texas—Thelocactus bicolor, Coryphantha radians, Ancistrocactus scheeri, Echinocereus pectinatus and roetteri, Escobaria bella, Hamatocactus hamatacanthus, Echinomastus unguispinus, Epithelantha micromeris, and Lophophora williamsii so plentiful in places that to walk without stepping on them wasn't easy. Besides cacti, there were agaves, nolinas and other examples of typical desert vegetation. More than anything, there was plenty of uninhabited country, promising lots of years before the cactus clan is crowded out by mankind.

SALTILLO, "277 miles from the border, the first large city after Piedras Negras, is considered the cradle of culture in the north. The climate is excellent and there are many splendid colonial and modern buildings. There is a gay fair here in October, at which time regional arts are sold, outstanding among them the fine sarapes for which the city is noted." Saltillo is of note to people in our hobby, too. At an altitude of 5200 feet, it is at the edge of the high "altiplanicie" of central Mexico, but still within the range of many plants found in the lower regions to the north. We had been told that we could profitably spend six weeks in Saltillo, travelling in a different direction and finding new cacti every day. We elected to spend four nights there, in order to explore in the directions of at least the four main points of the compass.

We had covered the northern approach on the road from Monclova. Yucca potosina, new to us the day before, already seemed like an old friend when we saw its Joshua Tree form with great clusters of white flowers dangling like bunches of grapes from the tips of its arms. We had been thrilled by finding our first colony of Ariocarpus retusus—first a few grizzled marginal specimens, then whole clusters of them. We had learned to scramble through the thick undergrowth of Hechtias, Jatropha and Agave lechuguilla which would prevail for much of our trip south. Astrophytum capricorne had appeared, with its long tortuous spines camouflaging it among the bunches of dry grass. We had found a delightful, light-green bodied, yellow-spined little cluster which seemed to exactly meet the description of Thelocactus roseanus, but members of the Mexico City club later showed us the same plant in their gardens, saying that it is not yet identified but will likely be classified as an Escobaria.

East of Saltillo is *MONTERREY*, capitol of the state of Nuevo Leon, "a prosperous city, with

Fig. 101. Left to right. Top row: Our vehicle for the Mexico Trip. Lophophora williamsii, Sabinas, Coahuila. An Agave at Monclova, Coah. Second row: Agave lechuguilla, N. of Saltillo, Coah. Astrophytum capricorne, N. of Saltillo, Coah. Opuntia microdasys, E. of Saltillo, Coah. Third row: Thelocactus lophothele E. of Saltillo, Coah. Mammillaria winterae S. E. of Saltillo, Coah. Ariocarpus retusus, S. E. of Saltillo, Coah. Fourth row: Ferocactus pringlei near Matehuala, S. L. P. Echinocactus visnaga near Matehuala, S. L. P. Mammillaria ritteriana near Matehuala, S. L. P. Fifth row: Lemaireocereus marginatus fence S. of Matehuala, S. L. P. Myrtillocactus geometrizans S. of Matehuala, S. L. P. Echinocereus tulensis E. of Huizache, S. L. P. Bottom row: Astrophytum myriostigma E. of Huizache, S. L. P. Coryphantha clava near Ciudad del Maiz, S. L. P. Ferocactus victoriensis W. of Ciudad Victoria, Tamps.

a great steel industry and innumerable other thriving industries, country clubs, excellent restaurants and fine hotels." We didn't see this paragon of cities. Our eastward trip from Saltillo ended about eight miles too soon, in Huasteca Canyon, home of Agave victoriae reginae. After those towering cliffs dotted with the beautiful dark green, white margined agaves, anything man-made would have seemed an anticlimax. We had many other pleasant surprises that day, too. We had seen crowds of Thelocactus bicolor, fattened by the first summer rains, with red spines glowing in the early morning sun. We had found a little Echeveria with red-margined leaves, which our local Echeveria specialist hasn't yet identified—may be a new species. Opuntia microdasys is common in our California gardens, but great clumps of it with bright yellow tufts of glochids and yellower flowers were still a joy to the eye. A large-tubercled Coryphantha turned out to be poselgeriana, and a small cone-shaped one was nickelsae. Thelocactus lophothele was a complete surprise, as was Mammillaria plumosa. Our research hadn't prepared us for either of these in this area. Blooming season was in full swing, and we enjoyed the contrast between Neolloydia conoidea's magenta flowers and the yellow Coryphantha blossoms.

South of Saltillo are towering mountains slashed by deep canyons. The next morning we set forth for one of these. The road was too poor and our ambition for hiking not enough to take us all the way up the canyon to timberline, but its lower reaches were rewarding enough. We had our first close look at Ferocactus pringlei in its native home, and decided that it would be an easy plant to remember, with its red, hooked centrals and hair-like white radial spines. Mammillaria lenta, covered with glassy white spines, nestled in occasional crevices in the cliffs, while M. ritteriana and M. meiecantha var. melanocentra clustered everywhere. Opuntia stenopetala appeared at first to have great composite red flowers. On closer inspection the flowers themselves were tiny, but they were surrounded by quantities of bright red awl-shaped leaves. Echinocereus, Echinomastus, Neolloydia and many of the other genera we had found farther north also abounded here.

The following day we took the road west toward Torreon, through low hills and plains, and found the vegetation to be still different. Echinocactus horizonthalonius was the most prevalent cactus in this direction, blooming by the thousands, in all shades of pink through magenta. In fact, we found two specimens with satiny white blossoms. Again there were many species of cacti common to both Coahuila and Texas, but not the completely new finds we had made during the previous few days.

Leaving Saltillo the next morning, we looked forward to searching for Mammillaria winterae in the mountains southeast of town. Sure enough, at the first likely looking stop we located splendid ones. M. winterae is described as the largest of mammillarias, and the specimens lived up to advance notice, single heads measuring up to a foot across. For size comparison in our pictures, we had decided to use a Mexican peso, which is a coin about midway in size between a silver dollar and a half-dollar (1⅜ inches in diameter). It was thoroughly dwarfed by these big fellows.

Thelocactus lophothele was shorter-spined in this area, and Ariocarpus retusus greener and happier appearing than it had been farther north. California poppies and other familiar wildflowers were like a touch of home, but the mountain village of Los Llanos at 7000 feet looked entirely alien with its steep thatched roof cottages. Echinocactus viznaga now began to appear on the mountainsides among the Ferocactus pringlei, its juvenile plants often seeming to match descriptions of the elusive E. platyacanthus. Thelocactus bueckii, like Mammillaria winterae, obligingly appeared exactly where we had expected to find it, but we thought the colony looked as though it had seen hard times. Nearly every plant was a sunburned, reddish brown hue. It was not until later that we learned this color is typical of healthy specimens of T. bueckii.

We were now in Stenocactus country, and experienced for ourselves the truth of what we had been told about this genus—that published descriptions would help us very little in correctly classifying species, except for a few with very outstanding characteristics—too many "varieties, hybrids, and nondescripts," as the saying goes. This day we were privileged to stumble across several specimens of Leuchtenbergia principis, which has been assiduously collected in the past and is now seldom found growing wild.

MATEHUALA, "midway between Saltillo and San Luis Potosi, is an ideal place to stop, either for lunch or for the night." Or for a week, if you are a cactophile. We had to limit our stay to one night, but a few brief sorties in the area yielded Thelocactus sausseri, T. fossulatus, T. pottsii, Strombocactus schwartzii, Mammillaria compressa, M. candida, and Echinocereus pentalophus. The luckiest of these finds was the Strombocactus, a miniature plant nestled between rocks, which we surely would never have seen except for its pale pink flowers, as large as the plants themselves. Like Saltillo, Matehuala is a "mile high" city. Our entire trip from Saltillo to Mexico City was cool and pleasant because of the fact that altitudes ranged from 5000 to 9000 feet all the way.

About sixty miles south of Matehuala was the Huizache junction with Highway 80 to Tampico.

We turned east here on our way to Ciudad Victoria, and immediately began finding new plants. This is the region of a most confusing Ariocarpus, which appears to be a hybrid between retusus and trigonus, of Mammillaria neopotosina, M. surculosa, M. chionocephala, Neolloydia grandiflora, Thelocactus tulensis and Echinocereus tulensis, Astrophytum myriostigma, and more Leuchtenbergia and Stenocactus. Myrtillocactus geometrizans was present in great numbers and was covered with fruit, so that we enjoyed many a tasty snack of its juicy "berries." Lemaireocereus pruinosus loomed up from black basaltic boulders beyond Tepeyac. Fouquiera fasciculata at first glance looked like our own common ocotillo, till we noticed the more spreading growth habit and salmon-colored flowers.

CIUDAD MANTE, "a tropical village in the sugar-producing region, lying at the junction of the International Highway from Laredo with the road to Tampico." Just a minute—what's going on here? One moment we were at a six-thousand foot altitude on the high plains, the next we are among the sugar cane plantations of the tropics! Actually, the change was almost that sudden and breathtaking for us. Ciudad del Maiz, west of the divide, with its corn fields and Lemaireocereus marginatus fences, seemed perfectly typical of the high plateau region. Before we had travelled the sixty-five miles to Ciudad Mante we had dropped five thousand feet and passed through bewildering changes of vegetation. What must have been a majestic oak forest a few short years ago was only a mass of dead snags, draped with skeins of parasitic moss. Then suddenly we were out of the oaks and into forests of even larger trees, adorned with bromeliads. We began to see native palms and cycads, then a Hylocereus undatus creeping up a tree trunk.

Soon the trees arched above us, bringing twilight long before its proper time. Rhipsalis cassutha hung like pale mistletoe far overhead, and in a dim grotto a strangler fig seemed to writhe about its host tree. Selenicereus grandiflorus hung along the banks of the river that now appeared along the roadside. As we dropped lower, the trees became smaller and Beaucarnea recurvus began to appear more and more frequently, with immense bulbous bases and crowns of slender fronds. Between Nuevo Morelos and Antigua Morelos were handsome stands of Cephalocereus palmeri, wearing a silky white pseudocephalium at the tip of each branch. Unexpectedly, Mammillaria sartorii grew in the damp depths of this jungle, revising our thinking about sun or drainage as this plant is concerned. After Antiquo Morelos the sugar plantations put a stop to cactus hunting for the time being.

CIUDAD VICTORIA, capital of the State of Tamaulipas, "offers the tourist ideal hunting conditions and either salt or fresh water fishing. The region is the center of northern Mexico's production of sisal, where one may see vast fields of this plant, which provides the fibers so extensively used for making bags and cordage." These sisal agaves were the principal representatives of the succulent family to be seen between Ciudad Mante and Ciudad Victoria, except for a few examples of Lemaireocereus griseus which had been left standing along the roadside, and the everpresent platyopuntias which are grown so extensively all over Mexico for their fruit, or "tunas." However, our particular hunting expedition was to be in the mountains west of the city in the direction of the village of Jaumave.

We are quite willing to agree that fishing is good in the area. Certainly there was plenty of water—particularly in a swollen stream a few kilometers before we reached our goal. Thunderheads massed on all sides, threatening to send more water pouring into the creek and gushing across the narrow dirt road on which we had crossed the mountains, so we made caution the better part of valor and turned back without the Obregonia and Encephalocarpus we had hoped to find. Still, with Ferocactus victorienses, Echinocereus pentacanthus and E. blankii, Mammillaria baumii and others, to say nothing of the exciting beauty of the scenery, we felt that the trip had been worthwhile. The next day we retraced our way through Ciudad Mante and back up to the plateau, preparatory to heading south again toward Mexico City.

Now came one of the outstanding experiences of our trip—finding that most difficult to locate of cacti, Neogomezia agavoides. After jouncing over some thirty miles of recently washed out dirt road, our optimism was at a low ebb when we reached the habitat of this strange little plant, which looks like a miniature agave and is inclined to pull itself almost out of sight into the soil during dry weather. Luckily the same rains which deteriorated the roads had brought out the Neogomezias, and we were lucky enough to find quite a little colony. We have one picture in which there are five of them within two feet. In order to be able to locate them later, we laid a coin beside each tiny plant. Now that the picture is developed, we can see only the coins, and actually these little fellows are almost that hard to see in the field. It is not surprising that so few of them are found in cultivation!

SAN LUIS POTOSI "is a flourishing handsome city, the place of numerous mines and industries and of countless old churches. There are all kinds of athletic clubs, including those dedicated to hunting and fishing, for the hills in this region are full of game. This region was was one of the last subdued by the conquerors in the XVI century, but the discovery of gold and

silver in Zacatecas made necessary the establishment of towns on the way to Mexico. A mission was set up at San Luis and soon silver was discovered here also. The rich mines reminded the Spaniards of the fabulous gold mines of Potosi, Bolivia, so the town was named in its honor."

This region is rich not only in gold and silver, but in cacti as well. Stenocactus is here, in long-spined and short-spined variations, with dozens of wavy ribs like pentacanthus or only a few, as in coptonogonus. There are large plants—Myrtillocactus, towering Opuntias, immense stands of Lemaireocereus dumortieri—and tiny ones, such as Thelocactus valdezianus and Pelecyphora aselliformis. There is Ferocactus melocactiformis with slender spines and Ferocactus latispinus with great flat ones. There is Coryphantha erecta, crowned with silky yellow flowers, and knobby Thelocactus fossulatus. There are a good baker's dozen of Mammillarias. M. uncinata is unusual in that it is a hemispherical type, but with strongly hooked central spines. M. gigantea is huge and handsome, though not quite so large as winterae. M. bucareliensis has jet black central spines, and M. celsiana is covered with lovely golden ones. M. chionocephala, decipiens and roseoalba are only a few of the others. Opuntias are not our favorite genus, but there are some striking ones here, including robusta with its huge round glaucous pads and a species whose base is covered with long white hairs. *To be Continued*

Editor's Note: It was difficult to make a selection of photos from the hundreds taken by the authors. Next issue we will show another page of pictures and a plate of nine outstanding photos.—S.E.H.

HOWARD E. GATES SOCIETY

The Howard E. Gates Memorial Cactus & Succulent Society has continued its busy round of activities.

The April meeting program, Desert Landscaping, was ably presented by Mrs. "Cactus Slim" Pat Moorten, of Palm Springs, and she gave us many ideas on the use of cacti and the other succulents in landscaping. On April 8, we trekked to the Anza-Borrego Desert State Park, Borrego Springs, where State Park Naturalist Dalton E. Merkel took our members on a conducted tour in the Laqui Well area. The weekend of April 15-16, we not only had the responsibility of setting up and taking care of the Cactus and Succulent Exhibit at the Riverside Flower Show, but many of our members exhibited and won awards for fine specimens. We also furnished hosts and hostesses for the exhibit through out the show, and shared cuttings from our gardens with the public. April 20-30 saw us at the National Orange Show in San Bernardino, California, where our Society Exhibit won a first place, and for which we received $100.

On May 3, we gathered in San Bernardino, where a spell-bound group watched "Grafter" Gil Tegelberg demonstrate the fine points of cactus grafting. Many of our members have already started grafted plants to be exhibited in next year's Riverside Flower Show. The Mohave Cactus Club invited our members to join them on a tour of the Kelso, Baker area of the Mojave Desert, and several members and families spent a weekend with them, reporting a very good trip. On May 21, we joined with the National Cactus and Succulent Society, and toured the Huntington Gardens.

On June 7, we were privileged to have as our guest speaker, Don Skinner of Los Angeles, who told us about Echeverias, and then showed many beautiful slides to illustrate his lecture. Needless to say, some of our members are now collecting Echeverias. On June 11, we joined with the National Cactus & Succulent Society in accepting Madame Ganna Walska's invitation to tour her fabulous gardens, Lotusland, in Montecito. A never to be forgotten trip, and we will relive it many times with our pictures. Many thanks to a gracious Lady.

SPOTLIGHT ON ROUND ROBINS

May I congratulate all of you for keeping the Robins in flight so faithfully and well. Out of thirty-six Robins only four are unaccounted-for. It is a very good record. With regard to tardy Robins, members might help greatly if they would write to the director of that Robin when the Robin seems long overdue. This might prevent long delays as has happened in some cases.

Two members have been added to the lengthening Robin list. They are Miss S. L. Kent, Petone, Wellington, New Zealand and Mrs. Patricia Slayton, Reno, Nevada. My apologies to Mr. Franklin D. Crosby, Malibu, California, for omitting his name by error from the previous list of new members. However, he was placed in a Robin even if not recorded here. New members are always welcome and I hope to hear from many more who will find among the Robins mentioned below one or more that they would like to join.

The Epiphyte Robin is still seeking more members. Perhaps a list of the plants which are included in this Robin would be helpful. Excluding Epiphyllums, which have a separate Robin, they are: Rhipsalis, Ceropegia, Disocactus, Pseudorhypsalis, Aporocactus, Werkleocereus, Peperomia, Chiapasia, Hoya, Zygocactus, Schlumbergera, Hylocereus, Wilmattea, Wittia, Weberocereus, Rhipsalidopsis, Hatiora, Strophocactus, Epiphyllanthus, Mediocactus, Selenicereus, Heliocereus, Nyctocereus, Deamia, Cryptocereus, Pfeiffera, Eccremocactus. Isn't it surprising how many there are? It is not necessary to grow every one of these but a good representative list would be desireable, and will give whoever joins an excellent topic for discussion.

Succulents Only Robin No. 1 put in a request for one more member. This is a very fine Robin and I hope some member who loves succulents will consider joining it.

Succulents Only Robin No. 2 also needs members. It is a small Robin, at present, with four members and the rounds are made more quickly for that reason. I hope several will join it. The title of either of the Succulents Only Robins means succulents other than cacti.

The international Robin for Small Cacti and Succulents (including the mimicry plants) desires more members to join the several who asked for this Robin. If you are interested in such plants, now is the time to write in and be in at the beginning. One of the members hopefully looking for its first round has a wonderful collection of these plants and not only has them but blooms them very successfully. Wouldn't you like to join him?

The Arranger's Robin would like some new members. Don't hesitate to join if you like to putter around with decorative ideas. While this Robin asks that succulents be included as part of the arrangements you make, the subject matter covers a wide field. The decorative use of cacti and succulents has a place in the house beyond the growing of the plants themselves and is a challenge but with much pleasurable enjoyment to be gained from it. Several members could be added easily. Why not join.

The International Mammillaria Robin No. 2 is in need of members. Four if possible. The only plants which will be discussed will be Mammillarias. Those who collect them and wish to belong to this Robin will

find themselves in good company for Mr. David E. Watling, England, whose interest in these small cacti is almost sincere, will be a member when there are enough members to start it off. It is hoped that those who are most interested in Mammillarias will join this Robin. Happy to hear from you.

(Mrs.) Gladys H. Panis
P. O. Box 705, Falmouth, Massachusetts

SPINE CHATS

Ladislaus Cutak

Recently I received a new book from my Japanese cactologist friend, Mr. Hajime Oku, titled "Cacti for the Million." It is written entirely in Japanese but even if one does not understand the language, there are over 200 photos for study which will make the book valuable to lovers of succulent plants. In former books, Mr. Oku gave brief comments in English but in this one he has dispensed with this procedure because he felt the literary expressions of his language do not lend themselves to English translation too well. Cacti and the other succulents have appeared on postage stamps issued by various countries and Hajime Oku illustrates at least 34 such stamps which, I thought, was novel. The book contains 158 pages and can be obtained from the author who lives in Tokyo.

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While on the subject of books, it will be worthwhile to mention another new one, titled "Cacti" which was published in 1960 by three Czechoslovak cactologists: Pazout, Valnicek and Subik. It contains 182 pages with many full-page illustrations done in rotogravure style. Although the text is in Bohemian, the book should be in a cactophile's library for the pictures alone. The contents deal with the general knowledge of the cactus family, including its history, distribution and taxonomic grouping. Care and culture, as well as propagation, share many pages giving hints on raising them from seed, but cuttings, grafting, watering, fertilizing and control of pests and diseases and methods of growing the plants in the greenhouse, home and coldframes are discussed. A number of new species and varieties are described, such as *Pelecyphora valdeziana* var. *albiflora* which differs from the type by its larger body, more loosely arranged tubercles, yellowish spines and white blossoms; *Lobivia klusacekii* var. *roseiflora* with a globose body and rose-flowered blossoms; *Lobivia napina* with globular stems showing 14-17 ribs with areoles containing 12 radial spines and 3 centrals; *Parodia jujuyana* with elongated stems marked by 18 ribs with white tomentose areoles containing 16 greyish radial spines and 4 hooked centrals, its flowers red; *Gymnocalycium stellatum* var. *minimum* which does not, even in old age, exceed 5 cm. in breadth; *Gymnocalycium andreae* var. *svecianum* which differs from the type by having a harder stem, shorter spines and clear yellow flowers with short tubes; and *Gymnocalycium riojense* which was introduced by Fric in 1926 but never officially described. This native of Argentina possesses a simple globose body with 15 or more ribs and rose flowers from new areoles. The latter part of the book, approximately 27 pages, deals with succulents generally cultivated with cacti. The present book, "Cacti," is the first book published in the Czech language since 1929 when Oskar Smrz published his "Cacti and Other Succulents."

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Friedrich Ritter describes *Pyrrhocactus simulans* as a new species from Chile in the April 1961 issue of "Succulenta." This is a simple hemispheric cactus tending to become columnar with 11-13 ribs of ashy-grey color. Its areoles are large producing 8-12 black radial spines and 1-8 centrals. The flowers are funnelform, up to 4.25 cm. long and equally as broad, of a yellowish red color.

In the same issue H. W. De Boer and B. K. Boom discuss notes on Lithops, stating that there is a large number of species described which demand a systematical research, which would lead to a restriction of the number of species. De Boer made extensive seed trials in his glasshouse from seed originating from many wild localities and found that the variation in cultivated species does not differ too much from that at the natural localities. Consequently a number of new combinations in *Lithops* names has been created and a new variety made, like *Lithops divergens* var. *amethystina.*

Dr. De Boer continues his discussions on the Lithops in the May June issues of "Succulenta" and makes further new combinations and one new variety, *L. leslei* var. *minor* (p. 33). He also validates another new variety, *L. pseudotruncatella* var. *volkii,* (p. 68) which was not formally published when named in 1955. On page 57, Friedrich Ritter publishes another new Pyrrchocactus *(P. huascensis)* and illustrates it on the following page. This is a simple hemispheric cactus tending to become columnar with 12-16 tuberculate ribs accented by large areoles from which issue 5-8 black or brown radial spines and 1-4 centrals. The funnelform white-red flowers are 3.5-4.5 cm. long and 1.5-2 cm. broad when fully opened.

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From all reports the recent cactus convention in Mexico was a great success. The Henry Shaw Cactus Society was well represented but I was unable to make the trip, which is my disappointment. Our friends below the Border entertained our people so well that many want to return to Manana-land as soon as possible. For some this trip was the biggest surprise for they had not anticipated the gorgeous display of cactus species to be found in Mexico. Most of us are acquainted with pictures of giant cacti as seen in movies, on postcards and in travel books, but to come face to face with them for the first time is the thrill of your life!

* * *

From time to time you have heard me mention the Climatron in these pages and perhaps wondered what this structure really is. Well, it is a revolutionary greenhouse—a huge transparent dome fabricated of aluminum tubing and covered with plexiglass in which thousands of tropic plants are now growing under ideal climatic conditions. The structure, this October, is a year old and what a marvelous year it has been for me! To be sure, it wasn't all "cream and gravy" by a long shot, for long hours were spent in planning, visualizing and landscaping the new picturesque areas which are now the great features in the new building. An attempt to create naturalistic effects has been made enabling th veisitors to see a miniature mountain with a winding trail, a splashing jungle waterfall, a tropic bog surrounded by lush vegetation, mist forest and a lake with a transparent underwater passageway. Besides these features there are also rice paddies, such as one would see in Java or the Philippines, a banana plantation and a bit of Hawaii with colorful hibiscus, crotons, ginger lilies, etc. Other features are being planned for the Climatron will never be finished really as changes will be made as the plants grow and prosper. Jungle cacti, mostly of epiphytal habit, are finding a place in the Climatron and eventually a good collection will be maintained. At present, the visitors can view Rhipsalis, Disocacti and Epiphyllums hanging from trees or rock ledges. Some Pereskias will be added and also a few succulents which thrive in arid sections of the jungle areas. Yes, the Climatron is my "baby" and now requires a good deal of my time. So, if you don't see as many articles as I used to write or don't get quick answers to your letters, please remember that I'm not wasting time but devoting all of it to this new project, so that it will remain a worthy place for all to visit.

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Les Aloes de Madagascar by Reynolds is priced at $12.85 and *Les Euphorbes* by Ursch is $4.25. Both books are in French and only short runs were made.

SUCCULENTS IN CULTIVATION—Higgins (1960)

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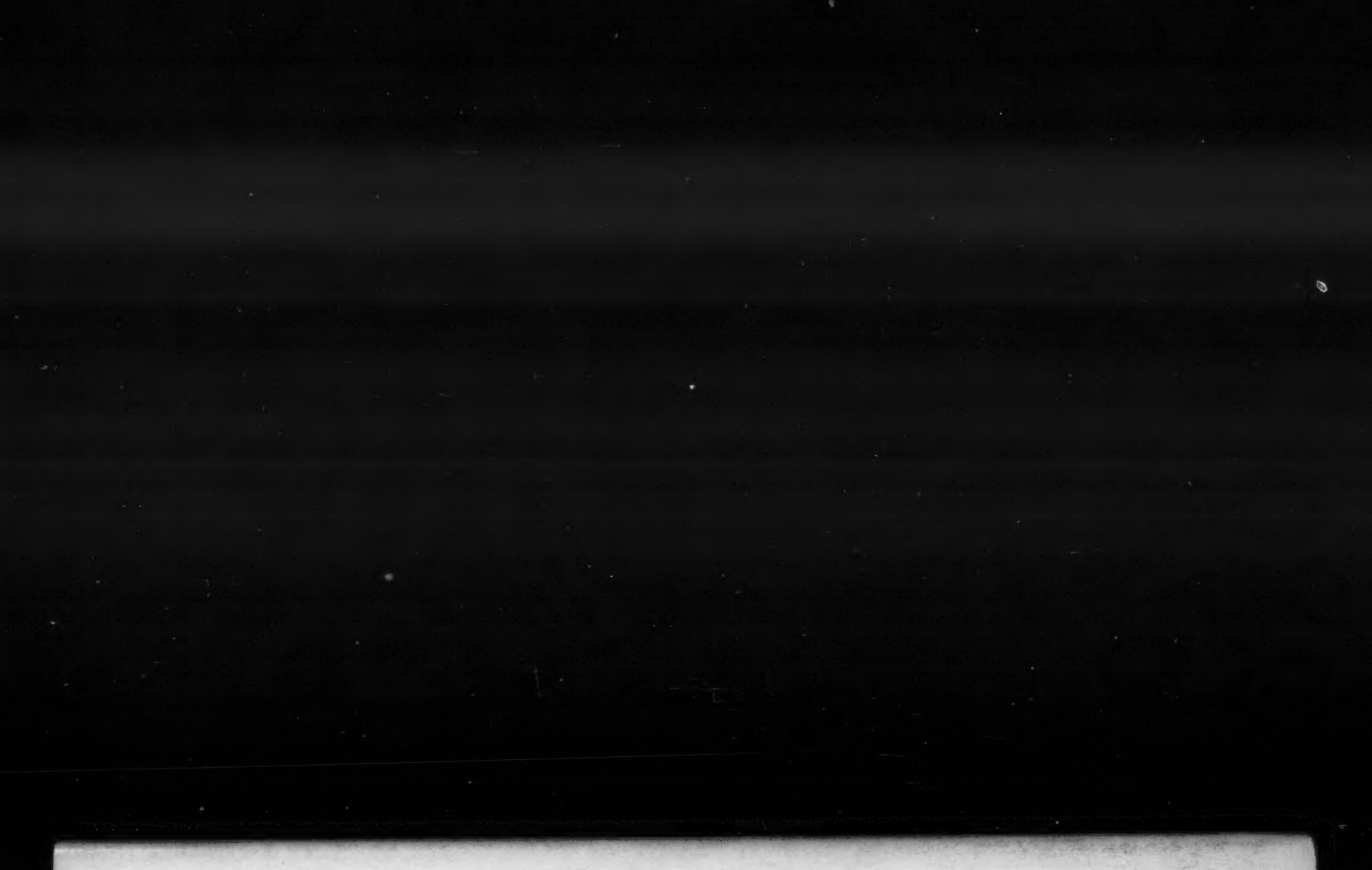
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